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The Role Of For-Profit Education In Social Stratification And Social Inequality In The United States

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Abstract

For-profit colleges now enroll about one in ten US college students. Their rapid expansion in the last two decades raises several questions about the role that they play in educational inequality. Broadly, this dissertation asks whether for-profit colleges help or hinder the students that they serve. I evaluate the relationship between for-profit colleges and social mobility at three critical junctures along the pathway through college and into young adulthood. First, why do students, in particular those with high levels of prior academic achievement, choose to enroll in for-profit colleges? Next, what impact do for-profit colleges have on the routes that students take to their bachelor's degree? What impact do these schools have on the transfer pathway – the link between two-year colleges and four-year bachelor's degree-granting schools? Lastly, how do graduates with for-profit bachelor's degrees fare when entering the labor market?

I answer these questions using three nationally representative data sources: one which follows high school students as they progress through college (ELS 2002), another that tracks beginning college students as they move through school and transition to the workforce (BPS 2004-2008), and a third which surveys new bachelor's degree graduates as they transition into their early careers (B&B 2008-2012). I find that all students frequently cite programmatic reasons to justify choosing for-profit colleges, but for high achieving students, a lack of individual and familial social capital may help explain why they choose for-profit education. I also find that two-year college students who begin college at for-profit schools are less likely to transfer to four-year colleges, for-profit or otherwise. Even among students who expect to transfer to a four-year college, those who start college at for-profit schools are less likely to make this transfer. Lastly, I find that Black and Asian-American for-profit bachelor's degree holders earn significantly less than their same-race peers with non-profit degrees. The data suggest that for-profit colleges, narrowly defined, have had a largely negative effect on social mobility, particularly for disadvantaged groups.

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INTRODUCTION

Over the last few decades, for-profit colleges[1] have experienced enormous growth. What began as networks of small trade and vocational schools has grown into a $48 billion a year industry of over 800 institutions nationwide (Beaver 2009), enrolling more than 3 million college students across the country (Arbeit and Horn 2017). According to the U.S. Government Accountability Office (2011), enrollment at for-profit colleges increased 229% between 1990 and 2010, and the industry now makes up roughly 10% of all post-secondary enrollments in the United States. Over the same period, enrollments grew 35% at public, not-for-profit institutions, and 38% at private, nonprofit institutions. When looking only at institutions that participate in federally funded Title IV student aid programs, the percentage change in enrollments is even more noteworthy (see Figure 0.1). Moreover, for-profit colleges enroll a large number of students from backgrounds typically underrepresented in American higher education (e.g., low-income students, non-traditional students, veterans, etc.) (Deming, Goldin, and Katz 2012). Many of these students rely on federal student aid to fund their education. Because of this, for-profits generate an estimated three-quarters of their revenue from federal student aid. Moreover, for-profits are the beneficiaries of approximately one-quarter of Pell grants and federal subsidized and unsubsidized student loans. For-profits also received nearly 37 percent of

[1] I define for-profit colleges are defined as institutions that are owned and operated by enterprises that exist primarily to generate a taxable profit for their shareholders or private owners (e.g., University of Phoenix, DeVry University, etc.). I contrast for-profit colleges with public and private, non-profit colleges and universities. Although non-profit institutions are also revenue-generating enterprises, their excess revenue is repurposed toward supporting aspects of their mission as non-profit organizations. Some examples of private, non-profit institutions: Harvard University, the University of Pennsylvania, University of Southern California. Some examples of public, non-profit institutions: University of California, Berkeley, University of Michigan, Florida State University. Public community colleges are also considered public, non-profit colleges.

post-9/11 GI Bill education benefits in the program's first year (Deming et al. 2012; Kutz 2010; Mettler 2014). Federal student aid money is arguably allocated to disadvantaged students to aid their upward mobility. That for-profit colleges are the beneficiaries of a disproportionate amount of this money – allocated to promote students' mobility – offers a compelling argument in support of understanding how these institutions affect the outcomes of their students. It is also important to know how for-profit colleges function within a broader system of educational stratification.

While these schools have existed for the better part of the last 100 years, mostly as regional trade and vocational schools, their substantial growth is a relatively recent phenomenon. (Kinser 2006; Stevens and Kirst 2015). Their expansion in recent years has invited the scrutiny of both government agencies and consumer finance watchdog groups. As questions about their student recruitment and business practices, as well as their student outcomes and consumption of federal student aid funds, have come to light, they have come to occupy a prominent and controversial space in the higher education policy landscape. Some accuse for-profits of operating a predatory business model that targets vulnerable student populations and leaves them saddled with debt and degrees of little value (Consumer Financial Protection Bureau, 2014a; Consumer Financial Protection Bureau, 2014b). Others argue that these institutions are merely filling a need by offering a service to those who may not otherwise be able to access a post-secondary education (Harding, Rochmes, and Torres 2010). Moreover, for-profits' growth has spurred questions about the role they play in inequality of educational outcomes and social stratification, more broadly, in the U.S.

The surge in high profile regulatory attention that the industry received in the early 2010s was reflective of a harsh regulatory environment from the Obama administration that, in part, led the industry into a steep decline (Kamenetz 2015). As many scholars note, these schools typically face more stringent regulatory incursions under Democratic administrations while experiencing growth under laissez-faire Republican administrations that favor their deregulation (Beaver 2009; Kinser 2006; Stevens and Kirst 2015). As such, the recent rise and subsequent decline of the industry may just be the latest chapter of the ongoing "boom-and-bust" cycle that has characterized these institutions for most of their existence (Stevens and Kirst 2015).

Indeed, signs point to a possible thaw in the government's relationship with the industry under the Trump administration (Cohen 2017; Dynarski 2016). Recent changes in the political climate have ushered in a more favorable regulatory environment for for-profit colleges. History suggests that for-profits may be on the verge of yet another boom cycle, which will have wide-ranging implications for the more than 3 million undergraduate students estimated to be enrolled in their programs nationwide (Arbeit and Horn 2017). This raises questions about the role that these institutions have played and will continue to play in processes that affect educational inequality on a broad scale. Understanding how these institutions impact disparities in educational outcomes is a fundamental first step in gaining insight into the role that they play in social stratification.

I believe that for-profit colleges are uniquely positioned to study the mechanisms that undergird educational stratification and inequality at large. Moreover, they can help advance our understanding of how canonical theories of educational expansion, inequality, and status attainment operate at the lowest level of the status hierarchy in

higher education. In this dissertation, I inquire about the broad relationship between educational stratification and inequality and for-profit colleges. Do for-profit colleges help or hinder the students that they serve? How do for-profit institutions operate in the tracking, allocating, and socializing functions of higher education?

To answer these broad questions, this dissertation identifies and explores three distinct junctures in the higher education pipeline and transition to adulthood that are pivotal in understanding for-profit colleges' impact on their students' social mobility, as well as implications for social inequality. This dissertation consists of three stand-alone yet sequential and interrelated studies, each of which examines a unique point on the pathway through college and into young adulthood. I identify each of these points in the college trajectory and transition to adulthood as moments in time upon which mobility hinges. Upward or downward forces applied at these stages can have profound consequences on the course of an individual's long term educational and social mobility.

Entry into college is often the first step in the transition to adulthood. Consequently, this dissertation will first explore why high school students, in particular those with records of high academic achievement, choose to enroll in and attend for-profit colleges. Many scholars view for-profit students as "low-status" students who have limited educational options. However, a non-trivial number of high achieving students – presumably with higher status educational options – choose to enroll in for-profit schools. This study uses the Educational Longitudinal Study of 2002 (ELS), a nationally representative sample of students who were 10th graders in 2002. ELS monitors these students for eight additional years, as they finish high school, go through college, and join the workforce. ELS is ideal in helping to understand the college choices that students

make because it begins tracking its cohort before college and then follows up with them as they progress through college. I use ELS to gain insight into the reasons that students choose for-profit education, as well as aspects of their social and high school environment that may be related to for-profit college enrollment. In doing so, I work to give us a better picture of the mechanisms behind this unique form of academic undermatch.

Next, this dissertation explores a vital mechanism for upward mobility during college – the transfer pathway between two-year community colleges and four-year, bachelor's degree-granting institutions. When functioning optimally, this pathway provides a path to a bachelor's degree for less advantaged students, who disproportionately attend community colleges. In this study, I examine the functioning of this pathway for students who start college at two-year, for-profit schools. The transfer pathway provides a unique vantage point along the trajectory through college and can shed light on the barriers that can hamper students' mobility toward a degree. For-profit colleges are often compared to community colleges – they serve a similar student population and offer some similar curricula. In this study, I explore whether there are characteristics unique to for-profit colleges that present unique challenges for students hoping to use the transfer pathway for upward mobility. To do this, I use the 2004 – 2009 cohort of the Beginning Postsecondary Students Longitudinal Study, which followed a nationally representative sample of college students through their time in school. BPS is optimal for the study of college transfer because it includes a robust array of measures relating to transfer between institutions of higher education. In this study, I tie several theories of educational mobility and status attainment to college transfer and explore how

they collectively operate to reinforce inequality at the lowest end of the higher education status hierarchy.

In the last study, I examine the link between college and the world of work. I evaluate the labor market outcomes of students who receive their bachelor's degrees from for-profit colleges. Early occupational outcomes (i.e., those shortly after getting a bachelor's degree) can have profound impacts on an individual's employment outlook far down the road (Burning Glass Technologies and Strada Institute for the Future of Work 2018). Specifically, I examine measures such as for-profit graduates' annual income, debt-to-income ratio, employment stability, and employment intensity in comparison with their peers who earned their bachelor's degree from non-profit colleges. Although many studies have evaluated for-profit graduates' earnings, I aim to examine a broader array of measures of a successful transition to adulthood. I did this because I argue that narrowly focusing on earnings as a measure of post-grad economic stability misses the mark; we need a more detailed metric to fully assess job seekers' transition to the workforce. I also disaggregate my analyses on income by race/ethnicity. To do this, I rely on the 2008-2012 Baccalaureate & Beyond (B&B) Longitudinal Study, a nationally representative longitudinal survey of new bachelor's degree holders who received their degrees in the 2007-2008 academic year and were followed up with twice – in 2009 and again in 2012. B&B included a wide array of employment-related measures, which proved exceedingly beneficial in the study of labor market outcomes. In this study, I examine the influence of holding a for-profit degree on a number of labor market outcomes at the tail end of the transition to adulthood. Findings suggest that for-profit credentials may provide a negative signal to employers, but much more work is needed to

demonstrate this empirically. I also examine the relationship between for-profit credentials and race/ethnicity and, in the process, apply two racial and educational inequality frameworks to the relationship between race/ethnicity and for-profit credentials.

In sum, this dissertation provides an analysis of how for-profit colleges fit into the pathway to and through college and the transition to young adulthood. I believe that the relationship between social mobility and for-profit colleges hinges on the three points in time that I have identified with each constituent study. Going forward, scholars and policymakers looking to conduct work on this topic should look to these three critical moments along the pathway through college and the transition to adulthood as a way to assess these institutions' contributions to social mobility.

CHAPTER 1: UNDERMATCHED? WHY HIGH ACHIEVING STUDENTS CHOOSE FOR-PROFIT EDUCATION

ABSTRACT

Why do high achieving high school students choose to attend “low-status” for-profit schools when they could attend “higher status” schools? Using the *Education Longitudinal Study of 2002,* a nationally representative survey that tracks a cohort of 10th graders for eight years, this study attempts to explain this unique type of academic undermatch. Existing theories of educational choice do not adequately explain why these students choose for-profit education. I find that students of all achievement levels cite programmatic reasons for choosing for-profit education and deprioritize institutional cost relative to other factors. Among high achieving high school students, discussing college with parents, participation in extracurriculars, and having parents who are active in their child's school are all associated with a lower likelihood of choosing for-profit education. Findings suggest that a lack of social capital, in the form of students' and parents' academic integration, may be a critical factor in determining why high achievers choose for-profits. Results suggest that capital returns to status-group participation are not uniform across achievement groups.

INTRODUCTION

The literature on academic undermatch – the tendency of some students to enroll in colleges that have lower entrance requirements than those they could have likely attended given their academic credentials – is relatively well-developed. However, I explore a type of academic undermatch unique to for-profit colleges that has not been well studied. Many for-profit colleges have traditionally been open-admission schools – meaning they would admit almost anyone who had a high school diploma or its equivalent. Consequently, many scholars and policymakers consider for-profit colleges to be of low status. However, data and anecdotal evidence suggest that many students with records of high academic achievement enroll in open-admission for-profit colleges when their credentials could presumably afford them admittance to more selective colleges and universities. This phenomenon contradicts some conventional theories about institutional choice, evinces a novel dimension of academic undermatch which has received little attention in extant work, and challenges existing frameworks by which cultural capital is transferred across status hierarchies.

THEORETICAL MOTIVATION AND SIGNIFICANCE

For-Profit Colleges and Status Hierarchies

Over the past twenty years, for-profit colleges have become the fastest-growing institutions of higher learning in the United States as measured by enrollment (Arbeit and Horn 2017; Beaver 2009). Though for-profit entities have existed in education for the better part of the last century (Kinser 2006), their fundamental character began to change in the mid-1970s – clearing the way for the significant growth of the industry over the last three decades (Bañuelos 2016). Today, about three million college students in the US

attend for-profit schools, including "1 in 10 black students, 1 in 14 Latin[x] students, and 1 in 14 first-generation college students"(Arbeit and Horn 2017; Cottom 2017). While there was a decline in for-profit enrollments under the Obama administration, the industry seems poised to make a comeback under President Trump (Cohen 2017; Dynarski 2016; Kamenetz 2015). Given that for-profit schools disproportionately enroll vulnerable student populations (Chung 2012; Gelbgiser 2018; Holland and DeLuca 2016; Staklis, Bersudskaya, and Horn 2011) the implications for the rise and sustained prominence of these institutions for social stratification and inequality are wide-ranging.

Scholars most often situate the rise of for-profit colleges within *credentialing theory*, arguing that the growth of these institutions can be explained, at least in part, by a demand for educational credentials (Brown 2001; Collins 1971, 1979; Weber 1978). Conventional wisdom asserts that for-profit colleges have expanded to satiate an increased desire for educational credentials, particularly among lower SES groups (Cottom 2017). In turn, acquired educational credentials function as *signals* to economic actors (e.g., future employers) of deserved membership in a given socio-economic strata (Bills 2003; Bills and Wacker 2003; Spence 1973, 2002). In a *rational choice* framework, prospective students have a vested interest in maximizing the utility and signaling power of their future degrees to become upwardly mobile (Chung 2012; Iloh and Tierney 2014). This model works reasonably well in explaining why high achieving students opt for non-profit colleges with more established records of signaling power, and why low achieving students choose any degree (even from a for-profit college) over no degree at all. However, it struggles to explain why high achieving students, particularly those of low SES, opt for degrees that have diminished signaling power (e.g., for-profit colleges)

despite seemingly having more attractive options. As sociologist Tressie McMillan Cottom notes, she is often asked why students go to "those schools" at academic conferences (Cottom 2017:99). With this chapter, I aim to shed more light on this question. In particular, I seek to understand why students with records of high past academic achievement choose to attend for-profit schools.

Much of the extant literature on for-profit education presumes that students choose to attend these schools because they have few, if any, other higher education options (Bennett, Lucchesi, and Vedder 2010; Deming et al. 2012; R. Vedder 2012). However, year after year, a significant number of high achieving students who have the academic qualifications to attend traditional institutions of higher education opt instead to enroll in for-profit colleges. Implicit in much of the extant research on for-profit higher education is the assumption that many students who enroll in and graduate from these schools are considered "low status" (Chung 2012; Cottom 2017:89; Deming et al. 2012). Moreover, many scholars compare for-profit schools to community colleges, which they argue are their closest analog because they serve similar student populations (Deming et al. 2012; Holland and DeLuca 2016; Iloh and Tierney 2014; Iloh and Toldson 2013).

However, empirical data show that students with records of high academic achievement regularly opt to attend for-profit schools over traditional non-profit institutions of higher education (Cottom 2017:72–72). This suggests that for-profit schools do not solely cater to "low-status" students who are shut out of traditional higher education, but instead appeal to students with a range of past academic achievements. For-profit schools themselves often argue that they serve students that conventional higher education has left behind (Cottom 2017; R. Vedder 2012). However, if we

consider that almost all for-profit colleges are open-admission[2] (meaning that only a high school diploma or equivalent is required for admission), a significant proportion of those who enroll in for-profit programs would likely be eligible, based on their record of achievement, for more selective postsecondary programs. Why then do students that presumably have other post-secondary options afforded by their history of high academic performance (e.g., "high-status" students) choose to attend for-profit schools, which can be significantly more costly and have more tenuous outcomes (Deming et al. 2012; Lang and Weinstein 2012), over traditional institutions of higher learning?

Status Acquisition and Academic Undermatch

The term "academic undermatch" was borne from empirical work testing whether students who were admitted to elite academic institutions under affirmative action were equally qualified (Alon and Tienda 2005; Bowen and Bok 1998; Rodriguez 2013). Though its origin may be considered problematic, the term lends a useful conceptual framework through which to think about the consequences of college enrollment for students of varying levels of academic achievement. Academic undermatch occurs when students enroll in colleges which are less selective and less academically rigorous than those that they have the academic qualifications to attend (Ann M. Gansemer-Topf, Downey, and Genschel 2017; Belasco and Trivette 2015; Rebecca M. Callahan and Humphries 2016; R. M. Callahan and Humphries 2016; Lowry 2017; Roderick, Coca, and Nagaoka 2011; Rodriguez 2013, 2015; Roksa and Deutschlander 2018; Smith, Pender, and Howell 2013; Tiboris 2014). These students, for whatever reason, choose to attend schools with lower entrance requirements than those they could have attended

[2] (Alba and Lavin 1981)

given their credentials. Estimates vary regarding the prevalence of academic undermatch, but most recent literature estimates that around 41% of all college students undermatch (Smith et al. 2013). Many scholars note that students from lower SES backgrounds are more likely to undermatch, as are students of color, urban and rural students, and students whose parents lack college degrees (Deutschlander 2017; Hurwitz et al. 2012; Rodriguez 2015; Smith et al. 2013). Latinx students undermatch at higher rates than Whites but it is unclear how undermatch affects Black student populations due to data limitations (Roderick et al. 2011; Rodriguez 2015; Smith et al. 2013). Moreover, low SES students with similar qualifications as their higher SES peers are less likely to attend college, more likely to attend two-year colleges than four-year colleges, and are less likely to apply to very selective institutions (Roderick et al. 2011). There is a substantial amount of evidence that students who undermatch take longer to graduate, and are less likely to graduate from college (Bowen and Bok 1998; Bowen, Chingos, and McPherson 2009; Horn 2006; Light and Strayer 2000; Smith et al. 2013). Moreover, Light and Strayer (2000) observe that "students of all academic ability levels have a higher probability of completing a degree if the selectivity level of the college they attend matches their measured academic skill level (248)."

There is a consensus among scholars regarding the mechanisms that precipitate academic undermatch. Many attribute undermatch to lack of academic preparation, as well as a lack of social and cultural capital needed to navigate the college admissions and financial aid processes (Roderick et al. 2011; Rodriguez 2015). This specialized knowledge has, more recently, been termed "college-specific" cultural capital (Deutschlander 2017). There is a robust literature suggesting that low SES students and

students of color do not have access to the type of specialized knowledge or guidance necessary to successfully navigate the college admissions process (Roderick et al. 2011; Stanton-Salazar 1997, 2001; Stanton-Salazar and Dornbusch 1995). Moreover, most students rely on their parents and broader social network for information and influence on college decision-making (Hossler, Schmit, and Vesper 1999; Roderick et al. 2011). Students may also lack adequate knowledge of the college planning and the admissions process, access to information about college and financial aid, as well as the encouragement to translate aspiration into college enrollment (Bowen et al. 2009; Roderick et al. 2011). The literature on cultural capital suggests that it relates positively to students' academic success (Lareau 1987, 2000, 2011; Lareau and Weininger 2003; Tramonte and Willms 2010). However, scholars cannot agree on whether the ways in which cultural capital is acquired reproduces inequality or can, in some instances, promotes mobility (Deutschlander 2017). Cultural reproduction theorists argue that cultural capital is largely acquired through status group membership – meaning that it is rarely possible for those less advantaged to accumulate the capital of more advantaged groups (Bourdieu and Passeron 1990; Deutschlander 2017; Lareau and Horvat 1999; Perna 2000; Roscigno and Ainsworth-Darnell 1999). By contrast, some scholars advocate for a definition of cultural capital that is obtained through status culture participation, not solely status group membership (Deutschlander 2017; DiMaggio 1982). This model of cultural capital acquisition, which I will term cultural mobility, allows for the possibility of less advantaged individuals acquiring cultural capital later in life via participation in various enriching activities (Aschaffenburg and Maas 1997; DiMaggio 1982; Dumais 2006; Graaf, Graaf, and Kraaykamp 2000; Perna 2000). Extant literature on academic

undermatch suggests that some aspects of the cultural mobility model are applicable – high school students can reduce their likelihood of undermatch by participating in various status group activities (e.g., college informationals, financial aid workshops, etc.). However, access to those types of enrichment activities is not equitably distributed, suggesting that elements of both the cultural reproduction and cultural mobility models manifest in circumstances of academic undermatch.

There is also some evidence that some high school factors such as size, urbanicity, racial/ethnic makeup, and district-level spending may influence the propensity of undermatch (Hurwitz et al. 2012; Rodriguez 2015). Some argue that high schools can institute certain structural supports and policies that can, in effect, help to mitigate undermatch (Hurwitz et al. 2012; Roderick et al. 2011). Students in urban high schools with a greater proportion of students who apply for the Free Application for Federal Student Aid (FAFSA), a prevalence of four-year college-going, where teachers hold college-going expectations, and prepare and support students through the application process are more likely to apply to and gain acceptance to four-year colleges; these students are also more likely to enroll in a college with selectivity levels commensurate to their level of achievement (Roderick et al. 2011:202).

In addition to these school-level effects, there is also evidence that certain peer and contextual effects can also contribute to the prevalence of undermatch. Some scholars find that regular student involvement in high school extracurriculars is associated with a lower likelihood of enrolling in a four-year college that is an undermatch (Roderick et al. 2011). This is particularly true for high school students who participate in sports and those who report extracurricular involvement during their senior

year (Broh 2002; Marsh 1992; Marsh and Kleitman 2005; Quirk, Keith, and Quirk 2001; Roderick et al. 2011).

Aside from requiring a high school diploma or its equivalent, nearly all for-profit colleges are non-selective, open-admissions institutions (Deming et al. 2012). Almost any student at an open-admission for-profit college with the academic credentials to attend a more selective institution can be considered under matched by the generally accepted definition. Moreover, for-profits enroll a student population that includes a plurality of low SES students, first-generation college students, and people of color – all groups that academic undermatch has been shown to disproportionately affect (Cottom 2017; Deming et al. 2012; Deming, Goldin, and Katz 2013; Deutschlander 2017; Hurwitz et al. 2012; Roderick et al. 2011; Rodriguez 2015; Smith et al. 2013).

Smith et al. (2013) argue that undermatch may be financially beneficial for students in certain situations. They speculate that attending a less selective college will likely be less expensive, and therefore will be an inexpensive way for some students to ascertain whether college is right for them. Those who decide to withdraw will do so without excessive student debt, Smith and colleagues argue (Smith et al. 2013:261). They concede, though, that we do not yet know much about the relationship between academic match, cost, and the likelihood of student success (Smith et al. 2013:261). This model may work well for traditional, non-profit colleges – where public and two-year institutions are typically less expensive than more selective and private schools. However, the argument that academic undermatch may contribute a cost-benefit to certain students falls flat when considering for-profit colleges. For-profit colleges typically cost more than comparable non-profit institutions, sometimes substantially more

(DeLuca, Clampet-Lundquist, and Edin 2016; Deming et al. 2012, 2013; Harding et al. 2010). Moreover, people who attend for-profit colleges hold more student debt, on average, than their peers who attend non-profit institutions – regardless of whether or not they graduate (Baum 2011; Belfield 2013; Cellini and Darolia 2017; Cottom 2017; DeLuca et al. 2016; Deming et al. 2012, 2013; Harding et al. 2010). Linking academic undermatch with a financial benefit makes sense when considering traditional two and four-year colleges. However, the inclusion of for-profit colleges into this framework reveals oversights in previous thought about the linkages between academic undermatch and cost. Previous research overstates the degree to which academic undermatch provides a financial benefit. Moreover, for-profit colleges problematize any perceived positive relationship between academic undermatch and cost.

The framework of academic undermatch is highly relevant to understanding the reasons that high achieving students, in particular, choose open admission for-profit education. However, undermatch has yet to be applied in this context. Moreover, the undermatch framework could help shed some light on the mechanisms that inform the choice of for-profit education among high achieving high schoolers.

Research Question

To address the gaps in extant research identified in the previous section, this chapter will answer the following question:

1. What are the factors that influence the choice of for-profit education among students with records of high academic achievement?

DATA, MEASURES, AND METHODS

Data and Measures.

Data. I use restricted data from the Education Longitudinal Study of 2002, a nationally representative sample of young people who were 10th graders in 2002. ELS monitors these students for eight years - throughout high school, college, and their transition to the workplace. ELS is a longitudinal study in which schools and students are sampled repeatedly over time; the 2002 cohort was initially followed at two-year intervals. ELS:2002 is administered and maintained by the National Center for Education Statistics (NCES) at the Institute for Education Sciences (IES), U.S. Department of Education (USDOE). In Spring 2002, the base year of the study, high school sophomores were selected to participate from a national sample of high schools. Students were randomly sampled within schools. The population of schools included in the sample included public and charter schools as well as Catholic and other private schools with 10th grades in the 50 U.S. states and the District of Columbia. There were approximately 750 schools in the final sample, which yielded about 17,000 sophomores. Their teachers, parents, principals, and librarians were surveyed as well. Students' achievement data in reading and mathematics were also collected. ELS oversampled Asian and Latinx students, as well as those at private schools.

Two years later, during the first follow-up, base year students who were still in their same schools were surveyed and tested in mathematics. The sample was also freshened during this time to make it nationally representative of high school seniors in Spring 2004. High school transcripts were collected shortly after the first follow-up. The second and third follow-ups were conducted two and eight years after high school graduation. The second follow-up, collected in 2006, surveyed sample members using self-administered online questionnaires or in-person interviews. The second follow up

also includes administrative data from sources such as the National Student Loan Data System and the Free Application for Federal Student Aid (FAFSA) (Ingels et al. 2014a).

Data for the third follow up were collected between July 2012 and February 2013 to assess respondents' outcomes regarding persistence, degree attainment, and labor market transition. Postsecondary transcripts were also collected as part of the third follow up. Data from this wave were supplemented by administrative records from the SAT, ACT, General Educational Development (GED), U.S. Department of Education Central Processing System (CPS), and the National Student Loan Data System (NSLDS). These data enable research to be conducted at three levels of analysis: 1) cross-sectional profiles, 2) longitudinal study and 3) inter-cohort comparisons with older and more recent cohorts of American high school students (Ingels et al. 2014a). For this chapter, I use a cross-sectional level of analysis.

Measures. My response variables were either 1) a measure of the primary reason respondents chose to attend their first post-secondary institution, or 2) the college type of their first post-secondary institution (i.e., whether or not it was for-profit). For the series of models with respondents' primary reason as the response variable, my explanatory variable of interest was college type, which was operationalized as the sector of students' first attended post-secondary institution. Respondents were allowed to choose among six options that best reflected the primary reason they decided to attend their first post-secondary institution. They could indicate that they made the choice due to 1) program of study, 2) the reputation of the program, faculty, or school, 3) cost, affordability, or financial reasons, 4) location, 5) personal or family reasons, or 6) another reason.

Although not particularly instructive, I opted to preserve the "another reason" category because I did not want to sacrifice any additional cases.

I also included covariates that measured respondents' race/ethnicity, gender, parents' highest level of education, and a composite measure of socioeconomic status. The composite measure of socioeconomic status that I used was borrowed directly from the original ELS:2002 data. The authors of the ELS:2002 data derived the SES composite measure from parent questionnaire data, or imputation and student data when parent data were not available. This composite measure is based on five standardized components that were given equal weight. These components were: 1) father's/guardian's education, 2) mother's/guardian's education, 3) family income, 4) father's/guardian's occupational prestige score, and 5) mother's/guardian's occupational prestige score (Bozick and Ingels 2008).[3]

I also controlled for the number of academic risk factors respondents encountered by 10th grade. This covariate was constructed by the authors of the ELS:2002 data from the following six indicators: whether the respondent 1) came from a single-parent household, 2) has two parents without a high school diploma, 3) has a sibling who has dropped out of school, 4) has changed schools two or more times (excluding those due to promotions), 5) has repeated at least one grade, and 6) comes from a household below the federal poverty threshold (Ingels et al. 2014b).

Additionally, I controlled for the percentage of minority students in respondents' high schools, whether they or their parents are non-native English speakers, respondents'

[3] Occupational prestige scores were determined based on the 1961 Duncan socioeconomic index (Bozick and Ingels 2008).

immigrant status (e.g., first/second generation, etc.) and, the percentage of students enrolled in college prep coursework in respondents' high schools. I included three covariates that tease out the mechanisms of parental involvement and social capital: 1) whether they discussed college with their parents, 2) if respondents' parents are involved in their school's parent-teacher organization, and 3) whether they participated in extracurriculars in high school. Lastly, I accounted for the number of months between when respondents ended high school and began college, whether they had children in high school, their high school grade point averages, and standardized composite math and reading test scores. These composite test scores were taken from the cognitive tests that were administered in the base year of ELS:2002. I chose to use the composite test scores instead of more traditional metrics like SAT/ACT because there were fewer missing cases to contend with. Population weighted descriptive statistics on all variables can be found in Table 1.1. Population weighted quartile distributions on achievement measures can be found in Table 1.1a.

[Table 1.1 about here]

Model Specification

I treated all missing data using listwise deletion. The predictors that measure composite test score and high school grade point average were broken down into quartiles, in order to better gauge the differences between tiers of achievement. I applied analysis weights to compensate for the unequal probabilities of selection into the sample and to adjust for bias due to non-response.

First, I ran a series of multinomial logit models within each of the four quartiles of high school GPA, where the outcome in these models was the primary reason that

respondents cited for choosing their first post-secondary institution. I also ran the same series of models and replaced high school GPA with the composite test score, generating one model in each of the four quartiles of composite test scores. This allowed me to get a better picture of what respondents valued most when selecting their first college, as well as any possible differences across achievement (test score and GPA) quartiles.

Next, I ran a series of binary logit models estimating the likelihood of enrollment in a for-profit post-secondary institution. Estimating these models allowed me to analyze the influence of extra-personal factors on respondents' choice to enroll in a for-profit college. Similar to the previous multinomial models, I ran these models within each of the four achievement quartiles on both high school GPA and composite test score; this yielded a total of eight models. While instructive, these models ran into the problem of separation – this was particularly true for models estimated within the fourth quartiles of GPA and composite test score. Separation occurs when any number of covariates in a logistic regression model perfectly predicts the outcome for most or all observations (Cook, Niehaus, and Zuhlke 2018; Firth 1993; Heinze and Schemper 2002; Kosmidis and Firth 2011). Separation substantially biases regression coefficients for affected covariates, making it difficult to draw valid inference from data in which separation is present. David Firth (1993) proposed that separation could be overcome by estimating binary logit models using penalized likelihood instead of standard maximum likelihood techniques; his conclusion has been validated by later work on the subject (Heinze and Schemper 2002).

To address separation in my maximum likelihood binary logit models, I estimated a set of models within each of the four quartiles on GPA, as well as within each of the

four quartiles of test score using the firth penalized likelihood method, which I describe in the previous paragraph (i.e., firthlogit). In addition to addressing missing regression coefficients in the models estimated by maximum likelihood, the models that I estimated via penalized likelihood also provide a robustness check on the coefficients that are estimated via maximum likelihood. To do this, I used the firthlogit package in Stata. Unfortunately, the firthlogit package does not accommodate weights when estimating penalized likelihood regression equations. Thus, I could not use any analysis weights when I estimated the penalized likelihood models. The weighted maximum likelihood models that I estimated were useful here because although they contained separation on some covariates, those parameters that were present allowed me to judge any loss of accuracy that came with being unable to weight the data. Fortunately, there was none.

Additionally, I calculated propensity scores for these data to use them to mitigate selection bias in my data. Once I estimated propensity scores, I employed propensity score covariate adjustment to account for selection bias and to further test the robustness of my results. Since full-scale propensity score matching methods drop nonmatches from the sample, I chose to employ these small sample propensity score methods instead to preserve the data. Propensity score covariate adjustment and similar methods are recommended by some when a small sample size makes full matching techniques imprudent (Guo and Fraser 2009; Holmes 2013; Holmes and Olsen 2010). I used these methods with models estimated by maximum likelihood as well as those estimated by penalized likelihood.

RESULTS

In total, I estimated one multinomial logit model within each of the four high school GPA quartiles with a measure of the primary reason for choosing a school as the outcome variable. I also estimated eight sets of binary logit models – one within each of the four achievement quartiles on both high school GPA and composite test score. This yielded a total of thirty-two binary logit models, and thirty-six models when the multinomial models were included. I only report on differences that reach a minimum statistical significance of $p < .10$. I estimated the binary logit models using penalized likelihood to address issues of separation that were evident when results were estimated via maximum likelihood (see Appendices 1.A and 1.B). I display the results of the multinomial logit and penalized likelihood binary logit models in Tables 1.2 through 1.4. I present all results as odds ratios (i.e., $e(\beta)$).

Achievement-related heterogeneity in the adjusted effect of college type on the primary reason for attendance.

Table 1.2 displays the results of the multinomial logistic regressions predicting primary reason for school choice within each of four achievement quartiles on high school GPA. In each case, the reference category on the dependent variable is those students who cite cost as the primary reason they chose their first-enrolled post-secondary institution. Within each of the four achievement quartiles, students at for-profit colleges are shown to be significantly more likely to have cited "program of study" than "cost" as the primary reason they chose to enroll in their first post-secondary institution. Moreover, the magnitude of these effects is large, though there is some variation based on achievement quartile.

For-profit college students in the lowest achievement quartile were predicted to be about 14 times more likely ($p < .001$) to choose their first college mainly for its program of study than considerations related to cost, when compared to their peers at non-profit colleges with similar achievement levels (OR: 15.20). For-profit college students in the lowest achievement quartile were also significantly more likely ($p < .05$) to cite the school's reputation, not its cost, as the main reason for choosing it compared to their peers at non-profit colleges. These students were about eight times more likely than their non-profit college peers to cite their school's reputation instead of its cost as the primary reason they chose to attend it (OR: 9.229).

[Table 1.2 about here]

For-profit students in the second achievement quartile were also significantly more likely ($p < .001$) to report having chosen their school primarily for its program of study rather than its cost, compared to their non-profit peers. Students who attend for-profit schools were predicted to be about 30 times more likely (OR: 31.83) to have chosen their college mainly for its programmatic offerings than its cost. Notably, this is the largest effect size for all four achievement quartiles. These students were also 12 times more likely (OR: 13.32; $p < .01$) to have chosen their college for its reputation than its cost. Students at for-profit colleges were also about four times more likely (OR: 5.279; $p < .10$) to say that they chose their school primarily due to personal reasons rather than cost. Students at for-profit schools were also significantly more likely (OR: 6.742; $p < .05$) to report that they chose their college for "another reason" as opposed to basing their college choice primarily on cost.

Students who fall in the third achievement quartile are also about 16 times more likely (OR: 16.59; $p < .001$) to have chosen their school for programmatic reasons rather than financial reasons if they attend a for-profit college. These students are also about four times more likely (OR: 5.073, $p < .05$) to say that they have chosen their college due to its reputation rather than cost. For-profit college students are about 80% less likely (OR: .194; $p < .10$) to have chosen their school primarily due to its location compared to its cost than their peers at non-profit schools. For-profit college students are also almost seven times (OR: 7.606; $p < .05$) more likely to have cited "another reason" for choosing their school rather than cost, compared to their peers at non-profit schools.

The highest achieving students (i.e., those that fall in the fourth and highest achievement quartile) were also significantly more likely ($p < .05$) to have chosen their college for programmatic reasons than financial considerations if they attend a for-profit college. Though significant, it is notable that the magnitude and level of significance of this difference is lowest among the highest achieving students. For-profit college students are nearly eight times (OR: 8.762) more likely to have chosen their college primarily for programmatic reasons than cost, compared to their peers at non-profit colleges. Aside from programmatic reasons, no other reasons for attendance are significantly related to college type among the highest achievers. By contrast, in the three lowest-achieving quartiles, reasons for attendance other than those that are program-related are significantly related to college type.

Although these results are instructive of the many reasons that students choose to enroll in for-profit colleges, perhaps they are the most indicative of the fact that when it comes to college choice, many students who enroll in for-profits place other

considerations above an institution's cost. To be sure, the highest achieving students who enroll in for-profits are less likely to prioritize other reasons above cost than their lower-achieving peers (as evidenced by comparing the magnitude and significance of the coefficients relative to the base category across quartiles). However, even the highest achievers who attended for-profits were more likely to prioritize a college's program of study above its cost.

Achievement-related heterogeneity in the adjusted likelihood of for-profit college enrollment related to high school experiences.

Tables 1.3 and 1.4 display the results of binary logit models predicting the likelihood of enrollment in a for-profit college based on several extra-personal factors. Due to issues with separation in the models that were estimated via maximum likelihood, I also estimated a series of models via penalized likelihood. Stata does not allow the use of weights when estimating models via penalized likelihood. I include the results of the models estimated via maximum likelihood as a robustness check – to evaluate whether those parameters estimated via penalized likelihood (without survey weights) aligned with the weighted parameters. The results from the unweighted penalized likelihood models closely aligned with the results of the weighted maximum likelihood models. This suggests that, in this case, probabilistic weighting procedures may not be necessary for valid outcomes. I also ran separate models within achievement quartiles on high school GPA and composite test score.

Among students in the top half of the test score achievement distribution (third and fourth quartiles), some common extra-personal factors affected the likelihood of enrollment in a for-profit college. When estimating the model parameters using

maximum likelihood (see Appendix 1.A), students in the top half of the test score achievement distribution who discussed college with their parents during high school were significantly less likely to enroll in a for-profit college. In the third achievement quartile, students who had discussed college with their parents were about 86% less likely (OR: .141; $p < .01$) to enroll in a for-profit college than their peers who had not discussed college with their parents while in high school. The highest achieving students (i.e., those in the fourth achievement quartile) who discussed college-going with their parents in high school were nearly 90% less likely (OR: .102; $p < .10$) to enroll in for-profit colleges than their peers who did not have these conversations with their parents while in high school. The effect of discussing college with parents was not present in the lowest-achieving quartile.

In addition to having discussed college with their parents while still in high school, other aspects of high achieving students' high school experience appear to have a bearing on their likelihood of enrolling in a for-profit college. In models estimated via maximum likelihood, students who scored in the fourth quartile whose parents were involved in their school's parent-teacher organization (PTO) were nearly 60% less likely (OR: .411; $p < .10$) to enroll in for-profit colleges than their academically similar peers whose parents were not involved in the PTO. Students in the top three-fourths of the test score distribution who participated in extracurricular activities in high school were also significantly less likely to enroll in a for-profit college. Students that fell in the second test score quartile who were involved in extracurriculars during high school were about 48% less likely (OR: .516; $p < .05$) to enroll in for-profit colleges than their academically similar peers who did not participate in extracurriculars. Students who scored in the third

test score quartile were about 80% less likely (OR: .202; $p < .001$) to enroll in for-profit colleges than their peers in the same quartile who were not involved in high school extracurriculars. The highest achieving students (i.e., those that were in the fourth test score quartile) that participated in extracurriculars in high school were about 72% less likely (OR: .282; $p < .05$) to enroll in for-profit colleges than their high achieving peers who did not. Among students in the lowest-achieving test score quartile, high school extracurricular participation, and for-profit college enrollment were not significantly related.

Although the maximum likelihood models suffer from validity issues due to separation, the penalized likelihood models yielded similar results to them. When estimating the model parameters by penalized likelihood (Table 1.3), students in the top half of the test score distribution who discussed college with their parents while still in high school were significantly less likely to enroll in for-profit colleges than their peers who did not – a result that mirrors the maximum likelihood models. Students in the third test score quartile who discussed college with their parents while in high school are about 86% less likely to enroll (OR: .135; $p < .001$) in for-profit colleges than their peers in the same quartile who did not. The highest achieving students (i.e., those in the fourth quartile) who discussed college with their parents while in high school were about 81% less likely to enroll (OR: .191; $p < .10$) in a for-profit college than their similarly achieving peers who did not.

[Table 1.3 about here]

Unlike the model estimated via maximum likelihood, the penalized likelihood model does not show a significant relationship between students in the top test score

quartile whose parents are involved in a parent-teacher organization and the likelihood of their enrollment in a for-profit college. Like the maximum likelihood model, students in the top half of the test score distribution are significantly less likely to enroll in for-profit colleges if they have participated in extracurriculars in high school. In this case, students in the third quartile were 76% less likely (OR: .240, $p < .001$) to enroll in for-profits and their peers in the highest achieving quartile were about 62% less likely (OR: .381, $p < .05$) to enroll in for-profits. Results on this measure differ from the maximum likelihood model among the lowest-achieving students, who, in the penalized likelihood model, are also less likely to enroll in for-profits if they've participated in extracurriculars in high school. Those in the lowest test score quartile who participated in high school extracurriculars are about 45% less likely (OR: .549; $p < .05$) to enroll in for-profit colleges than their peers who did not.

When measuring academic achievement by high school grade point average, the results are fairly similar to the models that use composite test scores as a measure of academic achievement. In the model estimated via maximum likelihood (see Appendix 1.B), high achieving students (i.e., those in the fourth test score quartile) who attended high schools with a greater percentage of 10^{th} graders in college prep courses were significantly less likely to enroll in for-profit colleges than their peers attending schools with a lower percentage of college prep course enrollment. Among students with high school grade point averages in the fourth quartile, each percentage point increase in 10^{th}-grade enrollment in college prep coursework at their high school is associated with a 2.1% decrease in the likelihood of enrollment in for-profit colleges (OR: .979; $p < .01$). Among students whose high school grade point averages were in the third quartile, those

who had discussed college with their parents were significantly less likely to enroll in for-profit colleges. These students were about 88% less likely (OR: .118; $p < .001$) to enroll in for-profit colleges than their academically similar peers who hadn't discussed college with their parents. Students whose high school grade point averages were in the second and fourth quartiles were significantly less likely to enroll in for-profit colleges if their parents attended their high school's parent-teacher organization meetings. The highest achieving students (i.e., those in the fourth GPA quartile) with parents involved in their school's PTO were 68% less likely (OR: .320; $p < .10$) to enroll in for-profit colleges, while their peers in the second GPA quartile were about 52% less likely (OR: .477; $p < .05$) to enroll in for-profit colleges.

Similar to other models, extracurricular participation is associated with a decrease in the likelihood of for-profit college enrollment among the top three quartiles. The effect is largest for students in the third quartile of high school GPA – they are about 85% less likely (OR: .154; $p < .001$) to enroll in for-profits than their peers in the same quartile who did not participate in high school extracurriculars. The highest achievers (i.e., those in the fourth quartile) are about 76% less likely (OR: .242; $p < .05$) to enroll in for-profits if they participated in high school extracurriculars. Students who had high school GPAs in the second quartile were about 40% less likely (OR: .599; $p < .10$) to enroll in for-profits if they participated in high school extracurriculars.

When estimating the parameters via penalized likelihood and measuring achievement by high school GPA, the results are largely consistent with the maximum likelihood GPA model. The results of this model can be found in Table 1.4. The highest achieving students (i.e., those with GPAs in the fourth quartile) were significantly less

likely to enroll in for-profits the higher the percentage of students in college prep coursework in their high school (OR: .981; $p < .01$). Moderately high achieving students (i.e., those in the third GPA quartile) were about 85% less likely (OR: .146; $p < .01$) to enroll in for-profits if they had discussed college with their parents. In a departure from the GPA model estimated via maximum likelihood, when estimating via penalized likelihood, there is a large positive effect among the highest achieving students who have children (OR: 17.04; $p < .10$) – meaning that these students are much more likely to enroll in for-profits if they have children. Moreover, the highest achievers (i.e., those in the fourth GPA quartile) are about 59% less likely (OR: .406; $p < .10$) to enroll in for-profits if their parents attended PTO meetings. Like previous models, students in the top half of the GPA distribution are significantly less likely to enroll in for-profits if they participated in extracurriculars in high school. Students in the third GPA quartile were 77% less likely to enroll (OR: .229; $p < .001$) in for-profits if they participated in high school extracurriculars. The highest achievers (i.e., those in the fourth quartile) were about 65% less likely to enroll (OR: .352; $p < .05$) in for-profits if they participated in high school extracurriculars.

[Table 1.4 about here]

DISCUSSION AND CONCLUSION

On their face, my results suggest that high achievers may be drawn to for-profit colleges because they perceive the programs of study offered to be more suitable to their needs than those offered by traditional institutions. This is often an argument made to explain why traditional community colleges are losing students to for-profit two-year colleges (Deming et al. 2012, 2013). However, my results also imply that the highest

achieving students (those in the fourth quartile on GPA or test score) are less likely to choose for-profits primarily for their programmatic offerings than their peers with a record of lower academic achievement (e.g., $\beta_{Q4} < \beta_{Q1} \ldots \beta_{Q3}$). Moreover, some research suggests that analysis of college choice that does not account for institutional pull-factors is becoming more myopic in an era when even traditional non-profit schools rely on increasingly unconventional methods to attract students (California Association of Private Postsecondary Schools 2017; Lederman 2015; R. K. Vedder 2012).

Recent research may shed more light on the reasons why so many students who end up enrolling in for-profit colleges cite programmatic reasons as their main motivating factor. This work suggests that many for-profit colleges design their recruitment processes and present the benefits of enrolling "in a way that capitalizes on [the] anxieties, stress, and fear" of low SES and lower-achieving students (Deil-Amen, Campbell, and Gjerde 2019). Specifically, there is evidence suggesting that many for-profit colleges aggressively and explicitly market their programmatic offerings as flexible, fast, and leading to lucrative employment opportunities in a way that uniquely appeals to lower SES students (Anon 2019). These types of marketing practices and pressure tactics may be directly related to why students who enroll in for-profits cite programmatic reasons as the primary reason they chose to enroll.

Among high achievers, several interesting patterns emerged in the results – some of which are consistent with extant literature on academic undermatch, cultural capital, and status acquisition. Results suggest that parental involvement, peer and contextual effects, and school effects all play a role in the likelihood that high achievers enroll in for-profit colleges. Extracurricular participation (measured in 12th grade) had the most

robust impact on the likelihood of for-profit college enrollment. Across all of my models, students who participated in extracurricular activities in their senior year of high school were significantly less likely to enroll in for-profit colleges. This finding is consistent with much of the extant literature that suggests that extracurricular participation reduces the likelihood that high school students will undermatch (Broh 2002; Covay and Carbonaro 2010; Marsh 1992). Moreover, the effect that extracurricular participation has on for-profit college enrollment can be viewed as an instance of peer, school, and contextual effects, as well as an instance in which status group participation translates to the acquisition of cultural capital (as evidenced by the lower likelihood of undermatch).

To disentangle the peer, school, and contextual effects at play and explore the exact mechanisms that undergird the effect of extracurricular participation, more fine-grained data are needed. Moreover, the literature suggests that the effect of extracurricular participation on undermatch is particularly strong for students who participate in sports-based extracurriculars. Unfortunately, these data do not allow me to explore what types of extracurricular activities are driving this effect. Nevertheless, this finding suggests that the mechanisms that contribute to undermatch among students who attend traditional (non-profit) colleges may parallel those that contribute to undermatch among students who attend for-profit colleges. If we view extracurricular clubs and activities as analogous to status groups, this finding also supports the argument that cultural capital can be acquired through status group participation, not solely group membership.

After extracurricular participation, the effect of having college discussions with parents on for-profit college enrollment is the second-most robust finding. Students who

fall in the upper half of the achievement distribution are less likely to enroll in for-profit schools if they report having discussed college with their parents while in high school. This effect is significant or marginally significant (i.e., $p < .10$) in each of the models that I present in this chapter. These results suggest that parental involvement and engagement in the college-going process, net of parents' education level, may play a role in the likelihood of a student to enroll in a for-profit college. This finding complicates existing scholarship that argues that parents' educational background matters more when it comes to undermatch than how engaged they are in their children's college selection process, indicating instead that parental engagement matters just as much, if not more, than parental education levels.

Moreover, students whose parents attend meetings of their school's parent-teacher organization (PTO) are less likely to enroll in for-profit colleges. This finding adds another dimension to the link between status group participation, cultural capital, and academic undermatch. If we consider parent-teacher organizations as analogous to status groups, the relationship between parents' PTO participation and students' likelihood of for-profit college undermatch suggests that students are not the only actors for whom status group participation can yield cultural capital. Moreover, if we consider this finding simultaneously with the finding that students whose parents discussed college with them are less likely to attend for-profits, a link can be envisioned between parents' status group participation and their children's cultural capital acquisition. This linkage implies that parents acquire cultural capital through status group participation, which they then pass on to their children through involvement with and engagement in their college-going processes. In these data, there is also an interesting SES effect on the likelihood of for-

profit enrollment among high achievers. Higher SES students were less likely to enroll in for-profits only if they were among the highest achievers. SES did not have the same effect on lower achievers or even those in the second-highest achieving quartile. This suggests that the impact of SES on this particular form of undermatch (i.e., for-profit undermatch) is not uniform even among high achievers and complicates existing work implying that the effect of SES on undermatch is relatively constant.

In addition to the previous findings, school composition may have an impact on students' likelihood of enrolling in for-profit colleges. Among the highest achievers (i.e., those in the fourth quartile), there is some evidence that the percentage of 10^{th} graders enrolled in college preparatory courses at a student's high school is significantly related to a student's likelihood of enrolling at a for-profit college. The higher the percentage of students enrolled in college prep coursework, the lower the likelihood that a particular student at that high school will go on to enroll in a for-profit college. These results imply that contextual, school, and peer effects impact the likelihood of for-profit undermatch among high achieving students. The higher the percentage of college prep courses offered at a school, the more likely that a high achieving student and/or their peer group will be enrolled in them. This finding implies that there may be some peer effects at work in this particular type of undermatch among high achievers. Alternatively, we can consider college preparatory courses as status groups and high achieving students as members of those status groups. Although college preparatory courses are not status groups in the traditional, familial sense, their barriers to entry (e.g., demonstrated academic achievement) are more rigid than would be acceptable under a model in which status group mobility can be accomplished through status group participation.

Taken together, my results suggest that status group participation, while an effective conduit of mobility for some students, does not benefit students of all achievement levels. In these data, only high achieving students reap the benefits of status group participation. Students with lower records of academic achievement who participate in status group activities are not less likely to go on to undermatch at a for-profit college (i.e., acquire college-specific cultural capital), while their high achieving peers are. For high achievers, the model of cultural capital acquisition consistent with status group participation seems to predominate, while their lower-achieving peers seem to exist within a more rigid framework that is more akin to status group membership. This can be interpreted as evidence that the cultural reproduction framework plays a more prominent role than the cultural mobility framework in conceptualizing the link between academic undermatch and cultural capital, in particular among students who attend for-profit colleges.

CHAPTER 2: A BROKEN PATHWAY? TRANSFER STUDENTS AND INSTITUTIONAL MOBILITY AT FOR-PROFIT COLLEGES

ABSTRACT

The transfer pathway – which allows for transfer between community colleges and four-year colleges – plays a critical role in upward mobility and degree attainment for many students. Students at two-year for-profit colleges, however, face a unique set of challenges when trying to gain access to this pathway. Using data from the 2004-2009 wave of the *Beginning Postsecondary Students Longitudinal Study,* a nationally representative sample of students who began college during the 2003-04 school year, I explore the functioning of the transfer pathway from two-year, for-profits to four-year colleges. I find that students who begin college at two-year for-profit schools are less likely to transfer to four-year colleges, non-profit or otherwise, successfully. Moreover, even among students who started college expecting to transfer to a four-year school, those that attended for-profits were less likely to make this transfer within six years of starting college. I argue that this represents a "cooling out" of students' expectations via an interplay between macro-level allocation theories, and micro-level socialization theories of status attainment. Social forces operating within and outside of for-profit colleges cause this cooling out of students' expectations.

INTRODUCTION

The transfer pathway – described by scholars as the link between two-year, community colleges, and four-year bachelor's degree-granting institutions – has the potential to be a pathway for upward mobility. This is particularly true for students of low SES and from underrepresented racial backgrounds, who are disproportionately represented at two-year, community colleges (Bowen et al. 2009; Carnevale and Strohl 2010; Jenkins and Fink 2015). However, while about 80 percent of community college students intend to transfer, only 20 percent do. Moreover, only 17 percent go on to complete their bachelor's degree (Horn and Skomsvold 2011; Jenkins and Fink 2015; Shapiro et al. 2013). Some scholars have suggested that community colleges may gradually lower their students' expectations through a process referred to as "cooling out" (Alexander, Bozick, and Entwisle 2008; Clark 1960). There is some evidence suggesting that there are notable barriers to transfer between two-year, non-profit colleges, and four-year colleges (Cottom 2017; Iloh and Tierney 2014). Most of the work on the transfer pathway focuses on community colleges; there is little extant work on the relationship between for-profit colleges and the transfer pathway. Understanding how for-profit colleges contribute to the transfer pathway will help us understand how the transfer pathway functions for some of the most disadvantaged student populations in higher education (Cottom 2017; Deming et al. 2012). Moreover, the transfer pathway operates at a critical juncture for mobility in higher education and can shed light on the socializing, allocating, and legitimating functions of education and stratification.

THEORETICAL MOTIVATION AND SIGNIFICANCE

For-Profit Colleges, the Transfer Pathway, and Upward Mobility

Transferring between schools, from a community college to a state university, for example, is a core pathway by which students (particularly those who are low-income, first-generation, and/or otherwise underrepresented) progress through higher education (Gandara et al. 2012). This linkage, which is known in the literature as the *transfer pathway*, often refers to the upward trajectory from two-year community colleges (or other associate-degree granting institutions), to a four-year institution and onward to a baccalaureate degree (Gandara et al. 2012; Handel and Williams 2012; Hodara et al. 2017; Wang, Chuang, and McCready 2017). Indeed, research suggests that "transfer from community colleges to four-year institutions offers a critical avenue for upward mobility [particularly] for many underrepresented students"(Jenkins and Fink 2015:1). Whether or not this pathway functions as intended is debated in the literature (Alba and Lavin 1981; Gandara et al. 2012; Handel and Williams 2012), but the role that for-profit colleges play in it is often overlooked (Bailey, Badway, and Gumport 2003). It is this step in the pathway that I will focus on in this chapter. Though there are certainly cases of students transferring either laterally, from non-profit four-year colleges to for-profit four-year colleges (see Goldrick-Rab 2016:183), or vertically from public, non-profit community colleges to bachelor's degree-granting for-profit colleges, a critical juncture[4] for upward mobility for students enrolled in two-year programs at for-profit colleges is the link between these programs and four-year bachelor's degree-granting non-profit institutions.

[4] I refer to this link as a crucial juncture because the literature suggests that graduates that hold bachelor's degrees from non-profit institutions are preferred on the job market and can command higher earnings than those from for-profit institutions (Deming, Goldin, and Katz 2012), and occupational mobility is key to social mobility.

This is especially important because the majority of students enrolled in for-profit colleges are enrolled in programs that are two-years or less in length (Cottom 2017; Deming et al. 2012). Moreover, there is general agreement in the literature that there are significant disparities in transfer rates between disadvantaged community college students and their more advantaged peers (Dougherty 1987; Dougherty and Kienzl 2006; Goldrick-Rab and Pfeffer 2009; Lee and Frank 1990; Velez and Javalgi 1987). While cleavages by SES in the rate of transfer at non-profit, community colleges are perhaps unsurprising, there is a dearth of work on how the transfer pathway from two-year to four-year colleges is further complicated by the intersection of class and college type (i.e., profit status of institutions).

Although there is an established literature on transfer pathways within non-profit institutions (Calcagno et al. 2008; Goldrick-Rab 2006; Handel and Williams 2012; Hodara et al. 2017; Long and Kurlaender 2009; Rosenbaum, Deil-Amen, and Person 2007; Wang et al. 2017), there is little that explicitly addresses the transfer pathway running from for-profit, two-year institutions to non-profit, four-year institutions. Moreover, the scholarship on for-profit institutions that does pay explicit attention to inter-sectoral pathways is mainly qualitative and/or descriptive (Bailey et al. 2003; Cottom 2017; Goldrick-Rab 2016:183; Iloh and Tierney 2014)[5]. Some literature places emphasis on the fact that community colleges and for-profits vie for students with similar academic and socio-demographic profiles (Holland and DeLuca 2016; Iloh and Tierney 2014; Iloh and Toldson 2013). While this is undoubtedly true, it belies the fact that

[5] Although Goldrick-Rab (2016) showcases work that relies on both quantitative and qualitative methodologies, I refer here specifically to the interview excerpt and ethnographic notes that span pages 182 to 183.

transfer pathways between sectors, and specifically from two-year, for-profit to four-year, BA-granting non-profit schools, serve an essential function in determining the role that for-profit colleges play in persistence and degree attainment.

Fundamental precepts governing the existence and viability of the transfer pathway for inter-institutional vertical mobility are what is known in higher education and policy circles as *articulation agreements.* According to the literature, articulation agreements function to "negotiate the requirements for students' movement from institution to institution and support the transfer intent"(Cottom 2017:149; Anderson et al. 2006). Articulation agreements are, in effect, contractual agreements between two higher education institutions wherein both institutions agree to recognize as valid course credits that are transferred between them (Anderson et al. 2006; Bailey et al. 2003; Cottom 2017). For-profit colleges have many articulation agreements in place with public community colleges (Bailey et al. 2003; Cottom 2017), but these agreements rarely govern relationships between for-profit, two-year institutions, and non-profit, four-year BA-granting institutions (Bailey et al. 2003; Cottom 2017). Because of this, transferring course credits to BA-granting institutions proves difficult for many students at two-year for-profits; this is particularly true at for-profit institutions that lack regional accreditation[6] (Bailey et al. 2003). To be sure, there are valid arguments that articulation agreements are chiefly about maintaining curricular and instructional quality, especially because many BA-granting, four-year non-profit institutions have concerns about

[6] Regional accreditation is considered the gold standard of higher education accreditation. Institutions that are regionally accredited are typically academically oriented, non-profit, and set minimum curricular quality standards, facilitating credit transfer. By contrast, institutions that are nationally accredited are usually for-profit, vocational/technical, and/or career-oriented (Wood 2006).

instructional quality at for-profits (Bailey et al. 2003; Cottom 2017). However, in practice, the lack of credit transferability acts as an additional impediment to upward transfer mobility for some of the most vulnerable student populations in higher education. These students often enroll in for-profit two-year colleges unaware that they may be unable to transfer the course credits they earn to non-profit institutions and/or apply them to earn a bachelor's degree. Moreover, there is evidence that admissions counselors at for-profit schools mislead students about the transferability of credits earned at their school (Kutz 2010). This lack of credit transferability acts as a de facto barrier to upward institutional mobility, increases time to degree, and (often) personal and educational expenditures. Moreover, barriers such as this, that are often unforeseen may discourage some students from continuing their education. Indeed, empirical work shows that the issue of credit transferability plays a role when students are choosing between for-profit and non-profit institutions[7] (Iloh and Tierney 2014). However, using this information to choose between institutions requires a level of bureaucratic and institutional knowledge/savvy (i.e., capital) that students considering to enroll in for-profit colleges may not have access to.

The literature on the transfer pathway from two-year for-profit schools to non-profit BA granting institutions is sparse. Since this point in the path is particularly relevant for degree attainment and upward mobility, additional research on it is of particular interest to sociologists of education and stratification scholars. The impact of incongruence in transfer protocols, in practice, prevents fluid cross-sectoral mobility and

[7] This requires a level of bureaucratic and institutional knowledge/savvy that not all vulnerable student populations possess; moreover, the technicalities of credit transferability may not be an issue that for-profit schools showcase.

may further dampen the educational outcomes of students who attend for-profit schools. Moreover, policies governing transfer may have an indirect impact on post-degree earnings/discretionary income since students at two-year for-profit schools accumulate significantly more student debt, and students that can transfer more credits can complete their degrees faster (resulting in a lower total debt burden) (Belfield 2013:7; Cellini and Darolia 2017). Most extant work on the transfer pathway has focused on non-profit community colleges, and the role that they play in the transfer pathway; very little has looked at the relationship between for-profit institutions and the transfer pathway. Moreover work that has made this distinction, has focused on transfers from community colleges *to* for-profit schools (Liu and Belfield 2014). Since for-profit institutions confer more associate's degrees than bachelor's degrees (Bailey et al. 2003) and earning an associate's degree is a critical step for many toward earning a bachelor's degree, work that further explores this particular aspect of the transfer pathway is an instructive way to expand the corpus of knowledge on social mobility and for-profit colleges, as well as within higher education more broadly. More work is needed to understand the mechanisms that undergird the transfer pathway for students who first enroll at for-profits. This work will help us gain more insight into the relationship between for-profit colleges, degree completion, and social mobility, as well as a more nuanced understanding of the mechanisms that encourage or inhibit movement within the higher education landscape.

Persistence theory suggests that students who begin college at a two-year community college and seek a bachelor's degree encounter three distinct barriers to successful degree completion (Crisp and Nuñez 2014; Dougherty 1992). First, students

must successfully progress through their first semester of college. Next, students must successfully transfer to a four-year, bachelor's degree-granting institution. Finally, students must complete their bachelor's degree. Although transfer and persistence are often thought of as distinct, there is substantial overlap, and some scholars argue that transfer should be considered a form of persistence in institutions of higher education (Crisp and Nuñez 2014; Hagedorn, Cypers, and Lester 2008).

Vincent Tinto (1975, 1993) offers perhaps the most comprehensive and widely cited framework for thinking about issues of persistence, degree attainment, and withdrawal from higher education. Drawing heavily from sociologist Emile Durkheim, Tinto argued that withdrawal from higher education could be seen as a case of elective departure from a communal network (Melguizo 2011; Tinto 1975, 1993). He argued that previous work on attainment had placed an onus on individual deficits without giving due consideration to how institutions may contribute to adverse outcomes. To this point, he argues that previous work on persistence and attainment focused too narrowly on describing educational outcomes without focusing on the underlying mechanisms that led to completion, persistence, and withdrawal. Though Tinto's work is not without flaw, particularly in thinking about community college students and those from underrepresented groups (Crisp and Nuñez 2014; Deil-Amen 2011; Schuetz 2005; Tierney 1992), he does call attention to the influence that macro-level and structuralist mechanisms can have on micro-level educational outcomes. Scholars of college persistence and transfer have increasingly relied upon Nora's (2004) student/institution engagement model (Arbona and Nora 2007; Crisp and Nora 2010, 2010; Kraemer 1995). The student engagement model places emphasis on the influence of the interaction

between the student and their institution when conceptualizing transfer and similar educational outcomes. Transfer among two-year college students can best be conceptualized as an amalgam of these two conceptual approaches. For-profit colleges, in particular, provide a unique vantage point for studying the role of structural and institutional forces at play in transfer, persistence, and mobility within college.

Cooling Out, Degree Expectations, and For-Profit Colleges

In the sociological tradition, community colleges and other sub-baccalaureate institutions have been thought, by some, to play a “cooling out” role (Alexander et al. 2008; Clark 1960). Clark (1960) argued that junior colleges serve a cooling out function in higher education in that they operate to massage the expectations of their students downward and facilitate their gradual disengagement from higher education. Brint and Karabel (1989) argue that community colleges route students away from transferring to four-year colleges by "convinc[ing them] that their talents do not permit them to rise further in the educational system" (224). Clark (1960) suggests that "cooling out" works to resolve a "conflict between open-door admission [at community colleges] and performance of high quality," which produces "a wide discrepancy between the hopes of entering students and the means of their realization" (571).

While whether and the degree to which two-year community colleges play this role has been debated (Alba and Lavin 1981; Alexander et al. 2008), for-profit, two-year colleges prove to be a unique medium to study the veracity of the “cooling out” framework. The distinction between for-profit, two-year colleges, and non-profit, community colleges offers a window into how tracking, stratification, and expectation management take on new modes of operation. Moreover, there is some evidence that

community colleges do indeed produce a modest "cooling out" effect (Alba and Lavin 1981). Scholars are mixed on the mechanisms that undergird the “cooling out” phenomenon – with traditionalists arguing that socialization theory explains how cooling out “massages” students’ expectations (Alba and Lavin 1981; Clark 1960; Kerckhoff 1976; Meyer 1977). Viewing cooling out as an instance of socialization theory minimizes the role of the institution (i.e., school) in the cooling out process. Notably, Clark (1960) emphasized the role of guidance counselors in lowering students’ expectations of themselves. Others argue for a more macro, institutionalist perspective in which allocation theory explains how community colleges divert students through course-taking and tracking (Alba and Lavin 1981; Kerckhoff 1976; Meyer 1977). Those who see cooling out as an instance of allocation theory point to the role of institutional obstacles that work to cool students out.

Students' aspirations and expectations are often seen as micro-level processes that significantly influence educational attainment (Melguizo 2011; Morgan 2005). Scholars generally agree that students' aspirations and expectations play some role in their educational outcomes, though the nature and extent of their impacts on status attainment is debated (Duncan, Featherman, and Duncan 1972a; Sewell, Haller, and Ohlendorf 1970; Sewell, Haller, and Portes 1969; Sewell and Hauser 1972). The Wisconsin model of status attainment provided an early blueprint for thinking about how individual-level motivation is influenced by aspirations, and how, in turn, motivation engenders educational attainment (Kirui and Kao 2018; Melguizo 2011; Morgan 2005; Sewell et al. 1969; Sewell and Hauser 1972, 1975).

Scholars have often distinguished educational aspirations and educational expectations. While many agree that expectations matter, much of the extant literature has found little to no effect of aspirations on achievement and educational outcomes (Hanson 1994; Kao and Tienda 1998; Mickelson 1990). Recent empirical work suggests that the relationship between aspirations and academic outcomes is mitigated by 1) students' expectations, and 2) alignment between aspirations and expectations. Indeed, when investigating the relationship between student expectations and academic outcomes, scholars have found it to be measurable and consistent (Bozick et al. 2010; Khattab 2015; Portes et al. 2010). Much of the empirical literature has investigated this relationship at the primary and secondary levels, but it can arguably be extended to the linkages between students' aspirations, expectations, and academic outcomes at the tertiary level too (Kirui and Kao 2018).

Whether for-profit colleges cool out their students' expectations remains to be seen. Some may point to higher attrition rates at for-profit colleges as an instance of cooling out (Bailey et al. 2003; Deming et al. 2012). However, to determine whether an institution has a cooling out effect, it is important to know the educational aspirations and expectations of its students. To gauge whether or not students' expectations have, indeed, been "massaged" downward over time, it is necessary to know their baseline expectations. Although it has been empirically demonstrated that some aspects of the "cooling out" framework, could conceivably apply to non-profit, community colleges (Alba and Lavin 1981), less is known about its applicability to similarly situated, for-profit institutions. The lack of credit transferability between two-year, for-profits and four-year, BA granting non-profits presents a barrier for for-profit students, which may

increase time to degree and, in some instances, may even encourage withdrawal among some students.

Articulation agreements, which are formal contracts between colleges that govern the transferability of credits between institutions, govern, for example, whether a four-year college will accept course credits completed at a two-year college. These formal agreements can play a central role in the seamless facilitation of upward transfer across institutions. Conversely, these agreements - or, more precisely, the *lack* of them between colleges – can inhibit the functioning of the transfer pathway as a vehicle for cross-institutional upward mobility. Indeed, recent research has found that "fewer than 60 percent of community college students were able to transfer most of their credits [to four-year colleges], and about 15 percent transferred almost no credits" (Jenkins and Fink 2015:3; Monaghan and Attewell 2015). The inability to transfer credits between institutions has measurable ramifications for persistence and degree completion. Scholars have found that "students who transferred almost all of their community college credits were [two and a half] times more likely to earn a bachelor's degree than students who transferred fewer than half of their credits" (Jenkins and Fink 2015:3; Monaghan and Attewell 2015). Moreover, among the twenty-five percent of non-profit, community college students who transfer, "sixty-two percent go on to earn their bachelor's degree"(Jenkins and Fink 2015:2). To be sure, the lack of formal acknowledgments of credit reciprocity is not exclusive to two-year, for-profits, and four-year, non-profits (Jenkins and Fink 2015). However, credit transferability does vary substantially by college type, with students transferring to non-profit, private colleges successfully transferring twenty-one percent fewer course credits than their peers transferring to non-

profit, public colleges. Moreover, college students transferring credits to for-profit colleges, were successful at transferring fifty-two percent fewer credits than their peers who transferred to non-profit, public colleges (Jenkins and Fink 2015; Simone 2014). Research suggests that among transfer students, Black and Latinx students, students with poor academic performance, and/or fewer credits at community colleges were more likely than their peers to transfer to for-profit colleges than non-profit colleges (Jenkins and Fink 2015; Liu and Belfield 2014). Moreover, college students who transfer to for-profit colleges are less likely to complete their bachelor's degrees than their peers who transfer to non-profit colleges (Jenkins and Fink 2015; Liu and Belfield 2014). Research suggests that students who transfer to for-profit colleges earn less than their peers who transfer to non-profit schools (Jenkins and Fink 2015; Liu and Belfield 2014).

Disparities in transfer rates and credit transferability across college type beg the question as to what mechanisms undergird them. I argue that by inhibiting credit transferability and extending time to degree, articulation agreements act as a de-facto structural mechanism which encourages cooling out among for-profit college students. Moreover, this mechanistic cooling out function serves as an instance of allocation theory whereby "people in modern societies are allocated to adult roles on the basis of…types of education, apart from anything they have learned in school." Thus, "education [functions as a] a selector, sorter, and allocator" (Blau and Duncan 1967; Duncan, Featherman, and Duncan 1972b; Kerckhoff 1976; Meyer 1977:58–59). Moreover, this sorting function played by for-profit colleges and articulation agreements "socializes [students] to accept as legitimate the limited roles to which they are allocated (Bowles and Gintis 1977:64)

Research Questions

To address the gaps in extant research identified in the previous section, this chapter asks the following questions:

1. Among students who began college at two-year schools, does origin college type influence the likelihood that they transfer to non-profit, four-year colleges?
2. Among students who began college at two-year schools, does origin college type influence the likelihood that they transfer to *any* four-year college?
3. Among students who began two-year colleges planning to transfer to four-year colleges, does origin college type influence the likelihood that they do?

DATA, MEASURES, AND METHODS

Data and Measures.

Data. I use data from the 2004-2009 wave of the *Beginning Postsecondary Students Longitudinal Study (BPS),* which followed a nationally representative sample of approximately 16,600[8] first-time college students who began college during the 2003-04 academic year, for six years. The data were collected in three waves, the first of which was taken from the 2004 National Postsecondary Student Aid Study (NPSAS) and the subsequent two from the 2006 and 2009 *BPS* follow up field tests. All three waves of data consisted of both interviews with participants as well as data gleaned from an internet portal that was made available for participants. The study collected data on several outcomes, including student persistence and attainment in college as well as transition to the workforce. Moreover, BPS includes many variables that attempt to

[8] The U.S. Department of Education's *National Center for Education Statistics (NCES)* does not allow for the reporting of the exact sample sizes of its restricted datasets. Therefore, all reported sample sizes in this paper must necessarily be rounded to the nearest tenth.

measure persistence toward degree and degree attainment, as well as measures of academic achievement, and socio-demographic factors.

The target population for BPS was beginning college students (referred to as "first-time beginners" (FTB)) who began college at post-secondary institutions in the United States and Puerto Rico in 2004. The BPS 2004-2009 sample originally consisted of 18,610 eligible students; when data collection completed, there were approximately 15,160 respondents with enough data to be considered study participants. Moreover, the response rate among students eligible to participate in the sample was 82%, and it reached 90% among respondents who were successfully located after the first round of data collection (Wine, Janson, and Wheeless 2011). The study respondents represented 3,030 post-secondary institutions, from which transcripts were also requested. Of these, 87% of institutions provided transcripts for study participants. In addition to participant interviews and institutional transcripts, a range of data was collected from the U.S. Department of Education's Central Processing System (CPS), the National Student Loan Data System (NSLDS), and the National Student Clearinghouse (NSC) (Wine et al. 2011). These data are optimal to study transfer patterns among students because they include several measures related to students' transfer pathways.

Measures. My response variables measure the likelihood of transferring from a two-year college to either 1) a four-year non-profit BA granting institution, or 2) any four-year BA granting institution (non-profit or for-profit). I estimate separate models for each of these outcomes. I also estimate the likelihood of transferring to a four-year BA granting institution among students at two-year colleges who planned to do so when they began their post-secondary education. To accomplish this, I modeled the probability of

vertical upward transfer (i.e., transfer from a two-year to a four-year college) among students who began college at two-year institutions. First, I modeled this probability among two-year college students who transferred to a non-profit, four-year school. Second, I modeled this probability among all two-year college students who transferred to a four-year school, regardless of whether or not their destination institution was for-profit. Finally, BPS asked two-year college students whether they intended to transfer to four-year colleges when they began school in 2003-04. Among students that said they planned to transfer to four-year colleges when they started at two-year schools, I modeled the probability that they made this transfer within six years of starting college (i.e., by 2009). For all of my models, my explanatory variable of interest was college type, which was operationalized as the for-profit status of students' first-attended post-secondary institution. In all cases, this institution was a two-year college.

Additional covariates that I included as controls can be divided into five substantive areas. First, I controlled for demographic characteristics such as gender, race/ethnicity, and status as a first-generation college student. Next, I accounted for pre-college factors such as high school grade point average (GPA), high school mathematics course taking, whether students earned college credit while in high school, whether participants had delayed enrollment in college after they graduated from high school, and the highest degree that students expected to earn when they began college. Then, I account for a range of environmental pull factors that influence educational persistence and attainment. These environmental pull factors include a categorical measure of the number of hours worked per week when students began college in 2004, a measure of whether or not they were considered independent from their parents during the 2003-2004 school year, a

categorical measure of the total amount of financial aid that students received when they began college, and whether or not they had assumed part-time student status at any point while in school. Lastly, I included explanatory variables centering on students' college experiences. These measures included whether students expressed plans to transfer to a four-year college when they began college at a two-year school (this measure was included as a covariate in two of three sets of nested models and the basis for exclusion in the third set). Measures also include academic integration, which was an index derived by BPS that included measures of 1) participation in study groups, 2) contact with faculty, 3) meeting with an academic advisor and 4) talking to faculty outside of class (Crisp and Nuñez 2014; Wine et al. 2011). I also accounted for whether students took any remedial coursework during their first year of college, and whether they took any distance education courses during their first year. Covariates that I have chosen to include here are consistent with theoretical and empirical work on academic retention and transfer mobility in college (Crisp and Nuñez 2014; Rendón, Jalomo, and Nora 2004; Wang 2009). Population-weighted descriptive statistics on all variables can be found in Table 2.1.

[Table 2.1 about here]

Model Specification

I treated all missing data using multiple imputation. Observations were missing on the following variables: 1) High School GPA (20% missing), 2) HS Math Course taking (16% missing), 3) Earned college credit while in HS (16% missing), 4) Academic Integration Index (9% missing), and 5) Delayed college enrollment (<1% missing).

First, I ran a series of four nested binary penalized likelihood firth logistic regressions estimating the likelihood of vertical upward transfer among students at two-year colleges. I employ penalized likelihood models here, known as the "firth" method, because of their suitability for estimating logistic models on data with "rare" events (i.e., data with a "small number of cases on the rarer of the two outcomes") and their similarity to another method proposed earlier for the same problem (Allison 2012; Firth 1993; King and Zeng 2001; Leitgöb 2013). In these data, transfer of any kind was much rarer among for-profit students than their non-profit peers – the number of transfer students that originated at non-profit colleges was about 24 times larger than their peers who began at for-profit colleges. Upward transfer among students who originated at for-profit colleges was even more rare – dwarfed by about 65 times compared to upward transfer among their peers who began college at two-year non-profit schools.

This series of models estimated the likelihood of vertical transfer among students who made a transfer. By "vertical" transfer, I mean the "level or quantity of education received (number of years or highest degree)" (Barry and Barry 1992; Bogart and Murphey 1985; Charles and Bradley 2002; Cohen and Brawer 1996; Gerber and Cheung 2008:300; Hungar and Lieberman 2001). This vertical dimension of stratification is contrasted with the horizontal dimension, which is defined in the literature as "the different types or quality of education received at a particular level [of education]"(Gerber and Cheung 2008:300). Specifically, my response in these models measured the direction (e.g., upward, lateral/downward) of respondents' first transfer between schools within six years of when they began college in 2003-04. I recoded this measure such that immediate upward and delayed upward transfers were both considered

upward under my newly generated revised measure. Conversely, immediate downward, delayed downward, immediate lateral, and delayed lateral transfers were all considered *downward*. Students who never transferred were excluded from the analysis sample; this is important to note because it means that the results presented in the first two sets of models (Tables 2.2 and 2.3) underestimate the true likelihood of transfer among all students. Moreover, for my first set of models, I restricted the analysis sample to only those students who began college at two-year schools (i.e., less-than-two year and four-year institutions were excluded). The outcome variable on this model then became a dichotomous measure: where 1 represented students who made immediate or delayed upward transfers and 0 represented students who made immediate or delayed downward or lateral transfers.

In measuring the direction of transfer, BPS defines an immediate transfer as one that occurred within five months of leaving the origin institution. Conversely, BPS considered a transfer that occurred more than five months after leaving the origin institution to be delayed. BPS considered an upward transfer to be a transfer to a higher-level institution (e.g., from two-year to four-year, or from less-than-two year to two-year). In contrast, BPS defined a lateral transfer as a transfer to an institution at the same level (e.g., two-year to two-year, etc.), and a downward transfer as a transfer to a lower level institution (e.g., two-year to less-than-two year, etc.) (Wine et al. 2011). By restricting my analysis sample to just students who began college at two-year schools and excluding students whose first transfer destination institution was for-profit from these nested models, an upward transfer in the context of these analyses became a de facto transfer to a four-year non-profit college.

Next, I ran a series of four nested Firth logit models estimating the likelihood of transferring to any four-year college, regardless of whether it was for-profit, among students who began college at two-year institutions and had at least one recorded transfer. These models were identical to the first set of nested models, except for not including a rule that restricted the type of first transfer destination to non-profit (as was done with the first set of models). The dichotomous outcome remained the same as the set of models described in the previous paragraph. However, since students whose first transfer destination institution was for-profit were included in this set of nested analyses, an upward transfer in this context became a de factor transfer to any four-year college, whether non-profit or for-profit.

Lastly, I ran a series of four nested penalized regression logit models estimating the likelihood of transferring to any four-year college, regardless of profit-status, among those students who began college at two-year schools and expressed to BPS surveyors that they planned to transfer to a four-year school when asked at the beginning of their college careers in 2003-04. These models address the following question: Among students who begin college at two-year schools with the intent to transfer to four-year institutions, what is the likelihood that they will make this transfer within six years (i.e., the BPS tracking period)? For this series of models, the response variable was a measure of whether or not respondents had transferred to a four-year institution by 2009. This series of nested models included all of the covariates included in the other sets of analyses described in the previous paragraphs, except a measure of whether students planned to transfer to a four-year college when they began school. I estimated all of these models using the firthlogit package in Stata. Unfortunately, the firthlogit package

does not allow accommodate weights when estimating penalized likelihood regression equations. Post-estimation measures of goodness of fit and predictive power were estimated using the firthfit package in Stata.

RESULTS

All in all, I estimated 12 Firth penalized likelihood logistic regression models. I only report differences that reach a minimum statistical significance of $p < .10$. Moreover, all beta coefficients are exponentiated, so odds ratios are displayed (i.e., $\exp(\beta)$).

Heterogeneity by college type in the adjusted likelihood of transferring to a four-year, non-profit college, among transfer students originating at two-year colleges.

Table 2.2 displays the results of a series of four nested penalized logistic regressions predicting the likelihood of transfer to a four-year, non-profit school among transfer students originating at two-year colleges. I group covariates into four categories. First, in Model 1, I account for demographic characteristics. Next, Model 2 accounts for pre-college factors in addition to demographic characteristics. Model 3 considers environmental pull factors in addition to pre-college and demographic factors. Lastly, Model 4 includes measures of respondents' college experiences as well as all of the covariates in the previous models. All four nested models predict that students who begin their college careers at two-year for-profit schools are significantly less likely ($p < .001$) than their peers at two-year non-profit schools to transfer to four-year non-profit schools.

According to Model 1, which accounts for race/ethnicity, gender, and first-generation college student status, students at two-year for-profit colleges are about 79 percent less likely ($p < .001$; OR: .209) to transfer to a four-year, non-profit college

within six years than their peers at two-year non-profit colleges. Model 2, which accounts for pre-college factors such as high school GPA, high school math course-taking, earning college credit during high school, delaying enrollment in college, and educational aspirations in addition to demographic measures, suggests that students at two-year, for-profit schools are still significantly less likely ($p < .001$) to transfer to four-year, non-profit schools than their peers who attend two-year, non-profit schools. Model 2 predicts that once pre-college factors are accounted for, for-profit two-year students are about 73% less likely (OR: .269) to transfer to non-profit, four-year colleges than their peers at two-year, non-profit schools. Model 2 represents an approximately 6% increase in the likelihood that for-profit two-year college students will transfer to non-profit four-year colleges over Model 1. Model 3 incorporates measures of environmental pull factors, such as hours worked while in college, dependency status, financial aid received, and enrollment intensity, in addition to covariates from Models 1 and 2. Model 3 suggests that students at for-profit two-year colleges are about 75% less likely (OR: .248; $p < .001$) to transfer to four-year non-profit colleges than their peers who began college at two-year non-profit schools. After college experiences are taken into account in Model 4, students who begin college at two-year for-profit schools are predicted to be about 69% less likely (OR: .310; $p < .001$) to transfer to a four-year, non-profit college than their peers who began at two-year non-profit schools. Measures of model fit suggest that Model 4 fits the data the best. The negative effect of beginning college at a for-profit school on your odds of transferring to a four-year, non-profit is very stable in each model, and remains highly significant after accounting for a host of factors that influence students' likelihood of transfer.

Figure 2.1 plots the predicted probabilities and 95% confidence intervals, derived from Model 4, of transfer from a two-year college to a four-year, non-profit college. The probability of transfer to a four-year, non-profit school from a two-year, non-profit school is predicted to be .638 (95% CI: UCL = .656; LCL = .620). In contrast, the probability of transfer to a four-year, non-profit college among students who started college at a for-profit, two-year school is predicted to be .394 (95% CI: UCL = .503; LCL = .285). The difference in predicted probability between students who start at two-year, non-profits, and their peers who start at two-year, for-profits is .244, with those who began at non-profit colleges having a higher predicted probability of transfer. Moreover, the 95% confidence intervals for non-profits and for-profits do not overlap; there is a difference in probability of .117 between the lower confidence limit for non-profit colleges and the upper confidence limit for for-profit colleges. Moreover, differences in conditional probability estimates are highly significant ($p < .001$)

Heterogeneity by college type in the adjusted likelihood of transferring to any four-year college, among transfer students originating at two-year colleges.

Results from a series of nested regressions predicting the likelihood of transferring to *any* four-year college, regardless of whether it is for-profit or non-profit, among transfer students originating at two-year colleges are displayed in Table 2.3. Control variables are grouped into the same four categories as in the previous series of models: demographic characteristics, pre-college factors, environmental pull factors, and college experiences; these groups are added to the nested models in the same sequential order as in the previous set of models. All four nested models predict that students who begin their college careers at two-year for-profit schools are significantly less likely ($p <$

.001) than their peers at two-year non-profit schools to transfer to either type of four-year school (i.e., for-profit/non-profit). After accounting for race/ethnicity, gender, and first-generation college student status, Model 1 predicts that students who begin college at two-year for-profits were about 71% less likely (OR: .295; $p < .001$) to transfer to *any* four-year college, non-profit or for-profit, than their peers who began college at two-year non-profits.

After controlling for demographic characteristics and pre-college factors, Model 2 suggests that students who started at two-year for-profit colleges were 61% less likely (OR: .390; $p < .001$) to transfer to *any* four-year college than students who began college at two-year non-profits. The likelihood of for-profit students to transfer to *any* four-year college increases by about 10% once pre-college factors are accounted for by Model 2. Model 3, which also takes environmental pull-factors into account, predicts that those who began college at two-year for-profits are about 63% less likely (OR: .367; $p < .001$) to transfer to *any* four-year school than their cohort mates who began at two-year non-profit colleges. Model 4 incorporates the full battery of covariates, including college experiences, to predict the likelihood of transfer from two-year colleges to *any* four-year college. Model 4 predicts a 56% decrease in the likelihood (OR: .439; $p < .001$) of transferring to *any* four-year college among students at two-year for-profits, compared with their peers at two-year non-profits. Model 4 represents a 7% increase in the likelihood of transfer among for-profit students over Model 3 and a 5% increase over Model 2. Model 4 fits the data the best, according to various measures of fit. Similar to the set of nested models in Table 2.2, Models 1 through 4 suggest that the negative effect

of for-profit college attendance on the likelihood of transfer is both highly stable and highly significant.

Conditional probabilities and 95% confidence intervals predicting the likelihood of transfer to *any* four-year college by two-year school type, which are derived from Model 4, are plotted in Figure 2.2. The probability of transfer from a two-year non-profit to *any* type of four-year college is predicted to be .617 (95% CI: UCL = .635; LCL = .599). This probability among for-profit two-year college students is predicted to be just .439 (95% CI: UCL = .530; LCL = .348). There is a predicted .178 difference in probability of transfer to *any* four-year school between two-year, non-profit college students and their peers at for-profit schools. Confidence bands around the predicted values of these conditional probabilities do not overlap; there is a .069 difference between the lower confidence limit for two-year, non-profit students and the upper confidence limit for two-year, for-profit students. Moreover, differences in conditional probability estimates are highly significant ($p < .001$)

Heterogeneity by college type in the adjusted likelihood of transfer to a four-year college among students originating at two-year colleges who initially planned to make this transfer.

Table 2.4 displays the results of a set of nested penalized likelihood logistic regressions predicting the odds of transfer to *any* four-year college among two-year college students who planned to transfer to a four-year school when they began college. These models address the question of whether for-profit two-year colleges "cool out" students by lowering their expectations of upward transfer to four-year BA granting colleges (Alexander et al. 2008; Clark 1960). Model 1, which accounts for students'

race/ethnicity, gender, and first-generation college student status, predicts that if students who planned to transfer to a four-year college began school at a two-year, for-profit, their odds of making that transfer within six years were about 64% lower (OR: .361; $p < .001$) than their peers with identical transfer plans from two-year, non-profit colleges. After accounting for pre-college factors in addition to demographic characteristics, Model 2 estimates that for-profit two-year students with plans to transfer to a four-year college are about 52% less likely (OR: .482; $p < .01$) than their equally aspirational peers at two-year non-profit institutions to do so. Model 2 predicts an approximately 12% increase in the odds of transfer among for-profit students compared to the estimates in Model 1. Model 2 is also notable because it is the only probability model that I present in this chapter in which the p-value for for-profit college students does not meet the $a = .001$ threshold.

Model 3 accounts for environmental pull factors, in addition to pre-college factors, and demographic characteristics. The odds of transfer to *any* four-year college are estimated to be about 64% lower (OR: .364; $p < .001$) among two-year, for-profit college students than their peers at two-year, non-profit schools, according to Model 3. Model 3 represents about a 12% decrease in the odds of transfer among two-year, for-profit college students, compared to Model 2. Model 3 estimates a very similar effect as Model 1. When college experiences are taken into account, in Model 4, two-year for-profit college students were about 66% less likely (OR: .342; $p < .001$) to transfer to a four-year college than their peers at two-year non-profit schools. Model 4 fits the data the best. Like all of the previous models, Models 1 through 4 suggest that the negative effect of for-profit college attendance on the likelihood of transfer is both highly stable and highly significant.

Conditional probabilities and 95% confidence intervals predicting the likelihood of transfer to *any* four-college among two-year college students who planned to do so when they began college are plotted in Figure 2.3. These predicted probabilities were derived from Model 4. The probability of transfer among students at two-year, non-profit colleges is predicted to be .395 (95% CI: UCL = .410; LCL = .379). At .203, the probability of transfer among students at two-year, for-profit colleges is predicted to be .192 lower than it is for their peers at non-profit, two-year colleges. The lower confidence limit for students at two-year, for-profit colleges is .133, and the upper confidence limit for these students is .272. Confidence bands around the predicted values of these conditional probabilities do not overlap; there is a .107 difference between the lower confidence limit for two-year, non-profit students and the upper confidence limit for two-year, for-profit students. Moreover, differences in conditional probability estimates are highly significant ($p < .001$)

DISCUSSION AND CONCLUSION

To recap, I find that 1) among two-year college students who transfer, those students originating in for-profit colleges are significantly less likely to successfully make an upward transfer to four-year, non-profit colleges than their peers who start college at non-profit, community colleges. Moreover, I also find that 2) this effect is not only true among two-year for-profit students attempting to transfer to non-profit, four-year colleges. Rather, for-profit two-year college students are significantly less likely to transfer to *any type* of four-year college, whether non-profit or for-profit. Perhaps the most compelling finding is 3) among students who planned to transfer to a four-year college when they began at a two-year college, those who attended for-profit, two-year

schools were significantly less likely to do so within six years of enrolling in college than their peers who began at non-profit, two-year community colleges. In other words, among students who indicated that they planned to transfer to four-year colleges, their likelihood of following through on this plan within six years of starting college was significantly lower if they started college at a for-profit school rather than a community college. This is notable because it is evidence of the cooling out of expectations among for-profit college students (Alexander et al. 2008; Clark 1960). Moreover, population-weighted descriptive statistics presented in Table 2.1 suggest that students who start college at two-year, for-profit schools already have lower degree expectations than their peers who start at two-year, community colleges.

This fits with previous work that suggests that for-profit college attendance has a negative impact on persistence and degree completion (Gelbgiser 2018). This also fits with the theoretical literature suggesting that some colleges serve a "cooling-out" function through which the expectations of highly ambitious yet underachieving students are gradually lowered (Clark 1960). In thinking about higher education and inequality at a macro-level, Sigal Alon (2009) argues that when competition for college admissions is low, access to higher education expands, and inequality declines. My findings provide evidence complicating this argument at a micro-level of analysis. For-profit schools are largely open admission and generally enroll students of lower SES than their non-profit counterparts (i.e., they fit Alon's definition of "non-competitive and inclusive") (Cottom 2017; Deming et al. 2012, 2013). My results suggest that at a micro-level, for-profit, two-year schools are associated with a decreased likelihood of transfer to bachelor's degree-granting schools, even among those who expected to make this transfer when they began

college. This decreased likelihood of transfer ultimately leads to a reduced chance of bachelor's degree attainment. Decreased likelihood of transfer and bachelor's degree attainment would lead to inequality in educational outcomes that is effectively maintained, at best, and expanded, at worst (Alon 2009; Lucas 2001).

This “cooling out” function, it seems, may operate here to maintain or increase inequality, as Lucas (2001) posits, rather than decrease it. The fact that even among two-year college students who expected to transfer to a four-year school, those who attended for-profits were less likely to transfer, is in line with the “gradual disengagement” that Burton Clark argued was a hallmark of his “cooling out” theory (Clark 1960:575). That is, lower transfer rates, particularly among those who originally expected to do so, are indicative of a gradual series of steps through which "a goal may be stalled," and which ultimately may persuade an individual to "give up peacefully"(Clark 1960:575).

What about for-profit colleges results in students' lowering their expectations? I argue that articulation agreements and credit transferability (more accurately, the lack thereof) may play a substantial role in this process. Rules inhibiting credit transferability serve as a structural barrier to vertical fluid transfer, especially among student populations that may lack the capital necessary to research issues of credit transferability before enrolling in college. The inability of students to transfer course credits for which they have worked extends their time to degree and may diminish their expectations of transfer and degree completion. Although I have shown that a lack of credit transferability across types of institutions plays a significant role in stalling students' educational trajectories, I believe that articulation agreements play an important role in higher education. Articulation agreements serve as a standardizing mechanism for issues

of curricular and instructional quality across institutions. Maintaining curricular quality is particularly important regarding the modern for-profit college sector, which has long been accused of sub-standard instructional quality (Baird, Carter, and Roos 2019; Howarth and Stifler 2019). However, some work to quantify the impact of articulation agreements on the likelihood of transfer has found them not to be beneficial (Anderson et al. 2006). Articulation agreements are not inherently problematic but operate in this instance as a de facto barrier to vertical upward transfer and, by extension, mobility among for-profit college students. Perhaps these agreements are only indicative of a more significant issue regarding institutional mismatch and instructional standards that requires a more systemic intervention to address.

In summary, I argue that for-profit, two-year colleges act to "cool out" students' expectations for transfer via articulation agreements and policies governing the transferability of course credit. Moreover, this cooling out function serves as an example of a structuralist instance of allocation theory, whereby students are "allocated to adult roles [based on] … types of education" (Kerckhoff 1976; Meyer 1977:58–59). That is only part of the picture. I also argue that cooling out regarding credit transferability also occurs through more micro-level interactions within for-profit colleges, consistent with socialization theory. Similar to Clark's (1960) argument that guidance counselors play a central role in cooling out students' expectations, I observe that for-profit admissions counselors function in similar ways, particularly concerning counseling prospective students about course credit transferability. An undercover investigation conducted by the United States Government Accountability Office (GAO) concluded that admissions counselors at for-profit colleges routinely misled prospective students regarding, among

other things, course credit transferability (Kutz 2010). In at least one case, this involved admissions counselors providing inaccurate information about the transferability of course credits or withholding information altogether. I argue that this represents an instance of cooling out via socialization theory, in which admissions counselors at for-profit two-year colleges act at as a socialization mechanism within the school to massage students' expectations downward – convincing them to enroll in a college that may hamper their long term expectations of transferring to a four-year college and, ultimately, earning a bachelor's degree (Kerckhoff 1976).

Ultimately, both macro-level institutional processes, such as articulation agreements, and micro-level interactional processes, such as admissions counselors, can act to cool out students' expectations. An argument can be made that perhaps these two processes function in a symbiotic, reciprocal manner – students' expectations are initially, often unknowingly lowered by admissions counselors, and ultimately this cooling out is codified at a structural level by agreements governing credit transferability across institutions. Perhaps the test case of for-profit colleges illustrates the shortcomings of both the allocation and socialization theories of status attainment; indeed, it seems as if both processes may operate together and even depend on one another. The amalgam of these two theories serves to advocate for the application of Meyer's (1977) legitimation theory – whereby both socialization and allocation contribute to educational stratification (74).

CHAPTER 3: DEGREES OF DISPARITY: RACE, DEBT, AND LABOR MARKET OUTCOMES AMONG FOR-PROFIT COLLEGE BACHELOR'S DEGREE HOLDERS

ABSTRACT

Using the 2008-2012 wave of the *Baccalaureate & Beyond Longitudinal Study,* a nationally representative sample of young adults who earned a bachelor's degree in 2008 and entered the labor market soon after, I examine differences in labor market outcomes among graduates of for-profit and non-profit bachelor's degree-granting schools in the United States. Overall, I find that for-profit bachelor's degree holders do not earn less than their peers with non-profit credentials. However, Black and Asian-American for-profit bachelor's degree holders earn less than their same-race peers with non-profit bachelor's degrees. I also find that those with for-profit credentials were more likely to experience short-term employment instability, have higher average student debt to income ratios, and were more likely to be underemployed. I argue that employers sanction Black and Asian-American for-profit degree holders with earnings penalties in direct response to the interaction between race and degree status. I also argue that signaling theory may explain disparities in employment stability and underemployment.

INTRODUCTION

Nearly three million American college students are enrolled in for-profit colleges and enrollments have more than doubled in the past decade (Cottom 2017). In 2012, 10% of all bachelor's degrees granted in the US were granted by for-profit colleges; moreover, for-profit colleges dominate in granting bachelor's degrees to African-Americans (Cottom 2017; Walsh 2015). As more Americans are earning degrees from for-profit schools and entering the labor market, scholars have begun to wonder what, if any, implications this has for social stratification and inequality (Cellini and Chaudhary 2014; Darolia et al. 2015; Deming et al. 2016, 2012; Denice 2015; Lang and Weinstein 2012). Some have tried to isolate the effect of for-profit attendance and graduation on income inequality and have defined income inequality as observed differences in gross income (Cellini and Chaudhary 2014; Darolia et al. 2015; Deming et al. 2016, 2012; Denice 2015; Lang and Weinstein 2012).

Income rarely captures the full picture of financial well-being in the US, particularly for recent graduates who completed their education in a time when student debt, currently around $1.5 trillion, has surpassed credit card debt and auto loans to become the second-highest consumer debt category in the US (Friedman 2018). Graduates of for-profit colleges, in particular, have borne the majority of this burden; research suggests that, on average, for-profit graduates hold more student debt than their non-profit peers (Baum 2011; Belfield 2013; Cellini and Darolia 2017; Cottom 2017; Deming et al. 2012, 2013; Harding et al. 2010). Research should take student debt into account when making prescriptions about labor market inequality and stratification,

particularly when it comes to for-profit colleges. Continuing not to do so runs the risk of underestimating the impact that for-profit colleges have had on social stratification and inequality.

THEORETICAL MOTIVATION AND SIGNIFICANCE

For-Profit Colleges and Labor Market Outcomes

Published scholarship on for-profit colleges, to date, has mainly focused on the labor market and occupational outcomes of their graduates (Cellini and Chaudhary 2014; Darolia et al. 2015; Deming et al. 2016, 2012; Denice 2015; Lang and Weinstein 2012). Moreover, until recently, sociologists paid little attention to for-profit colleges (Denice 2015; Deterding and Pedulla 2016; Gelbgiser 2018; Holland and DeLuca 2016). Recently, however, sociologists have begun to study for-profit colleges, the students they enroll, and the labor market and occupational outcomes that they afford their graduates (Cottom 2017; Darolia et al. 2015; Denice 2015; Deterding and Pedulla 2016; Gelbgiser 2018; Holland and DeLuca 2016).

Scholars, regardless of disciplinary affiliation, who have endeavored to understand the relationship between college type and labor market/occupational outcomes, have often sought to do so in one of two ways. First, those interested in micro-level interactional processes that govern employers' assessment of for-profit credentials have primarily relied upon experimental methods (e.g., audit studies) (Pager 2003, 2007) to get at these questions (Darolia et al. 2015; Deming et al. 2016; Deterding and Pedulla 2016). By contrast, those interested in macro-level processes that govern how much value the labor market confers on for-profit credentials have tended toward the use of large-scale survey data and quantitative/quasi-experimental techniques (Cellini and Chaudhary

2014; Deming et al. 2012, 2013; Denice 2015; Gilpin, Saunders, and Stoddard 2015; Harding et al. 2010; Lang and Weinstein 2012; Liu and Belfield 2014).

Results from audit studies assessing the value that employers bestow upon for-profit credentials have been consistent – showing that employers at best view for-profit credentials no more favorably than credentials from non-profit institutions (Darolia et al. 2015; Deterding and Pedulla 2016). Moreover, findings suggest that in some instances, employers may view for-profit post-secondary credentials no more favorably than they view prospective job candidates with just high school diplomas (Darolia et al. 2015; Deterding and Pedulla 2016). Deming et al. (2016) suggest that for-profit credentials may be a liability to job seekers in the labor market, finding that candidates with for-profit credentials are less likely to receive callbacks than their peers with credentials from non-selective, public (non-profit) institutions. These findings have been consistent with the hypothesis that for-profit credentials act as a liability in the eyes of employers and other economic arbiters. The mechanisms behind these outcomes are unclear; perhaps for-profit schools do not convey their "social charters" to employers in the way that similarly situated schools do to mitigate the effects of their "low-status" (Deil-Amen and Rosenbaum 2004; Meyer 1977).

Others interested in the impact of college type on labor market outcomes have relied on secondary data. Extant literature on the labor market returns to for-profit sub-baccalaureate credentials is somewhat consistent. Research suggests that labor market entrants with credentials from certificate programs, regardless of college type, do not experience an earnings gain relative to their peers with no formal education beyond high school (Lang and Weinstein 2012). Moreover, other work posits that holders of for-profit

associate's degrees experience an earnings penalty relative to their peers with public or private non-profit credentials (Denice 2015; Lang and Weinstein 2012). Some research on the earnings of for-profit associate's degree holders opts to compare their outcomes with those of students who do not enroll in any post-secondary education at all after high school. This work concludes, perhaps unsurprisingly, that students with for-profit associate's degrees earn more than employees with just a high-school diploma (Cellini and Chaudhary 2014). One might logically conclude from this work that any degree post-high school will yield an earnings benefit, but that does not account for the debt burden incurred by students in for-profit associate's degree programs. A more appropriate comparison group here may be students who earn their associate's degrees from public institutions, which charge much lower tuition. Moreover, some work suggests that increases in enrollment and degree completion among for-profit two-year institutions mirror changes in labor market growth and wage increases in related occupations; these researchers posit that for-profit sub-baccalaureate institutions are more responsive to changes in the labor market than public community colleges (Gilpin et al. 2015).

The literature on outcomes of bachelor's degree holders is less clear. Some scholars find that for-profit bachelor's degree holders earn less than their peers with non-profit credentials[9] (Deming et al. 2012), while others find no significant difference (Denice 2015). Some suggest that community college students who transfer to and graduate from for-profit colleges experience an earnings penalty relative to their peers

[9] Deming, Goldin, and Katz (2012) point out that some of the earnings differentials can be attributed to lower rates of employment among for-profit students. Nonetheless, they conclude that first-time postsecondary students wind up with…lower earnings six years after starting college [compared to] observationally similar students from public and private non-profit institutions. (Deming et al. 2012:160)

who transfer from community colleges to public or private non-profit institutions (Liu and Belfield 2014). Extant work also finds that for-profit students are more likely to be unemployed and to experience significant[10] bouts of unemployment after they earn their degrees.

Extant literature on the relationship between college type and labor market outcomes has largely overlooked the influence that race and ethnicity have on earnings and labor market outcomes. Studies mostly include race and ethnicity as mere control variables to help explain away some of the variation in labor market outcomes, without close attention to how these factors may contribute to that heterogeneity. To be sure, most frequently used education datasets include small samples of for-profit students, which makes stratifying them further by ethno-racial group more challenging in terms of statistical power. Nonetheless, given that a significant proportion of the students attending for-profit institutions are members of racial/ethnic minority groups (Cottom 2017; Deming et al. 2012, 2013; Holland and DeLuca 2016; Iloh and Toldson 2013; Kinser 2006; Pusser and Turner 2006; Tierney and Hentschke 2007), work that pays explicit attention to labor market outcomes for students of color deserves more attention in the growing corpus of literature on these institutions. More work on this relationship would give us a better understanding of the major education-to-work pathways for key underrepresented groups in the U.S.

For-Profit Colleges, Financial Aid, and Student Debt

[10] Deming, Goldin, and Katz (2012) define a significant period of unemployment as one that lasts for three or more months.

To get a holistic picture of the outcomes that for-profit students encounter in the labor market, it is important to understand the business model upon which these institutions are predicated. Unlike their public and private non-profit counterparts who rely on more varied sources of revenue (Tierney and Hentschke 2007), for-profit institutions rely almost exclusively on the revenue generated from their students' federal and private student aid. A very high proportion of for-profit students are recipients of federal financial aid under Title IV of the Higher Education Act of 1965; federal money also makes up a substantial percentage of for-profit institutions' total revenue. An industry-wide average of 75% of total revenue comes from federal aid programs, and the percentage at some large for-profit schools (e.g., University of Phoenix) is closer to 90% (Deming et al. 2013). By contrast, in 2001, tuition and fees comprised 28% of total revenues at non-profit public and private institutions (Tierney and Hentschke 2007).

Moreover, in what has become colloquially known as the 90/10 rule, section 487(d)(4) of the amended Higher Education Act of 1965 (HEA) prohibits for-profit institutions from generating more than 90 percent of their revenue from federal Title IV student aid funds.[11] For-profit institutions also enroll a significant number of veterans who are eligible under the G.I. Bill[12] for tuition benefits; for-profits received 35.6% of education benefits paid under the Post-9/11 GI Bill of 2008. Moreover, G.I. Bill education benefits and tuition remissions are not considered federal Title IV student aid and, therefore, do not count toward the 90% cap imposed upon for-profits by the

[11] Higher Education Act of 1965, 89th U.S. Cong., Pub. L. No. 89-329 (1965) (amended).
[12] The Servicemen's Readjustment Act of 1944 and the Post-9/11 Veterans Educational Assistance Act of 2008, 2010, and 2014 provide financial benefits in the form of tuition funding toward post-secondary education for veterans of the U.S. Armed Forces.

Department of Education (Deming et al. 2012). This reliance on federal student aid and veterans' benefits, combined with the fact that for-profit institutions charge higher tuition, on average than their public and private non-profit counterparts (Deming et al. 2012, 2013; Harding et al. 2010) leads to a situation in which students who graduate from for-profit schools have a higher average student debt burden, and a higher loan default rate than their peers with non-profit degrees (Baum 2011; Belfield 2013; Cellini and Darolia 2017; Cottom 2017; Deming et al. 2012, 2013; Harding et al. 2010). Indeed, higher average student-debt burden coupled with poor educational/labor market outcomes along with a purported positive relationship between federal subsidies and tuition at for-profits (Cellini and Goldin 2014) has led some scholars to argue for the reduction of federal student aid funds directed to for-profits (Cellini and Koedel 2017).

In evaluating the impact of college type on post-graduation earnings, extant literature has paid little attention to the impact that student debt burden has on these earnings. Similarly, the literature overlooks the impact that debt burden has on discretionary or disposable income, and how this varies across college type. Most scholars have chosen to focus instead on the effects of college type on gross earnings, as data on net earnings and incremental student debt burden is more difficult to come by (Cellini and Chaudhary 2014; Denice 2015; Lang and Weinstein 2012; Liu and Belfield 2014). Discretionary income plays an essential role in the daily lives of many Americans. One could argue that it plays an even more important role than do gross earnings, especially in the daily lives of those of working-class, low-income, and/or racial/ethnic minority backgrounds, all of whom are overrepresented at for-profit institutions (Cottom 2017; Deming et al. 2012, 2013; Rothstein and Rouse 2011). Moreover, some research

suggests that there are significant gaps in rates of borrowing across college type, with for-profit students borrowing significantly more than their non-profit peers, especially at two-year schools; this work also shows that for-profit students have higher repayment rates than their non-profit peers (Belfield 2013; Cellini and Darolia 2017). Gaining a better understanding of how college type influences earnings, after accounting for student debt burden, will allow a clearer picture of the tangible, immediate impact that college-type has on labor market outcomes.

Also missing from the literature on the relationship between college-type and labor market outcomes is the impact of that college-type has on employment instability (i.e., job tenure) and underemployment. Some work suggests that job seekers with for-profit credentials are more likely to experience prolonged periods of unemployment, but the literature has not further explored this issue (Deming et al. 2012, 2013). Moreover, work on post-credential employment instability has not explicitly focused on job seekers who have received four-year bachelor's degrees from for-profit institutions (Deming et al. 2012, 2013).

Extant literature that has investigated the college type-related heterogeneity on labor market outcomes has almost always operationalized those outcomes as some measure of gross earnings, whether annual or incremental (Cellini and Chaudhary 2014; Cellini and Turner 2018; Deming et al. 2012, 2013; Denice 2015; Lang and Weinstein 2012; Liu and Belfield 2014), but has not factored in any measures of student debt. Discretionary income (i.e., subtracting student debt from gross income) would be a more appropriate measure to shed more light on the relationship between college type and labor market inequality.

Research Questions

To address these gaps in extant research, this project will seek to answer the following questions:

1. How does college type affect labor market outcomes among bachelor's degree holders?
2. How does race/ethnicity affect the relationship between college type and earnings among bachelor's degree holders?

DATA, MEASURES, AND METHODS

Data and Measures.

Data. I used restricted data from the 2008-2012 Baccalaureate & Beyond (B&B) Longitudinal Study (B&B:08/12), a nationally representative longitudinal survey of new bachelor's degree recipients who received their degrees during the 2007-2008 academic year and were followed up on in 2009 and again in 2012. B&B is administered and maintained by the National Center for Education Statistics (NCES) at the Institute for Education Sciences (IES), U.S. Department of Education (USDOE), and drew its participants from the 2007-08 National Postsecondary Student Aid Survey (NPSAS:08), also administered by the USDOE. In addition to records drawn from student interviews and associated inquiries, data collection for B&B:08/12 included matched data from the Central Processing System (CPS), the National Student Loan Data System (NSLDS), and the National Student Clearinghouse (NSC). These sources provided data on federal financial aid (loans and grants), academic and assessment records, and post-baccalaureate enrollment (Cominole et al. 2015). B&B:08/12 can be used to assess bachelor's degree holders' undergraduate experience, financial aid participation, student debt, and

repayment, enrollment in and persistence through post-baccalaureate education, and work experiences, especially for BA holders who become PK-12 teachers[13] (Cominole et al. 2015).

The B&B:08/12 sampling frame was comprised of students who received their bachelor's degrees between July 1, 2007, and June 30, 2008, at any Title IV college or university in the U.S. (including Puerto Rico). B&B:08/12 used a multistage sampling process, first sampling institutions from the NPSAS:08, next sampling students from those institutions, and finally verifying, via the NPSAS:08 interview, that students who were expected to complete their bachelor's degrees in the 2007-08 academic year actually did(Cominole et al. 2015). This process resulted in about 17,000 students[14] who were included in the B&B:08/12, 85% of whom completed an interview (Cominole et al. 2015). A responsive design was used to reduce nonresponse bias in the survey estimates by trying to increase response among respondents that were most likely not to respond (Cominole et al. 2015; Groves and Heeringa 2006). These data, with the appropriate adjustments[15], are meant to be representative of the approximately 1.6 million American college students who received bachelor's degrees during the sampling period. Analysis weights were used when calculating point estimates; these weights also adjust for non-response.

[13] The B&B:08/12 participant interviews included a battery of questions specifically for PK-12 teachers and designed to survey their experiences working as educators.
[14] National Center for Education Statistics (NCES) restricted data use agreements disallow the reporting of exact sample sizes; all sample sizes reported here are necessarily approximations.
[15] These adjustment methods are detailed in the "model specification" section.

Measures. My response variables were 1) the natural logarithm of annual income[16], 2) borrowers' debt to income ratio (operationalized as monthly debt payment to monthly income for borrowers who had entered repayment by 2009[17]), 3) whether or not participants had switched jobs at least once by 2009[18], and 4) the employment status of participants in 2009 (i.e., whether someone was working one part-time (PT), one full-time (FT), multiple jobs, or not working and/or enrolled in school). My predictor of interest was college type (i.e., non-profit/for-profit), operationalized as the sector (i.e., profit status) of respondents' bachelor's degree-granting institution. I also include a range of covariates aimed at addressing heterogeneity related to demographic and household characteristics, college characteristics, academic performance/aptitude, employment, and occupational characteristics, and regional characteristics. See Table 3.1 and Appendices 3.A and 3.B for population-weighted summary statistics on outcomes and covariates.

Covariates meant to control for demographic and household-related heterogeneity were respondents' age[19], gender, race/ethnicity, past or present military service, parental home ownership, maternal college-going, whether or not they had children, marital status, and parents' yearly income[20]. Variance related to college characteristics and achievement was controlled for with predictors measuring participants' age when they

[16] Annual income was transformed by taking its natural logarithm to aid interpretation; exponentiated regression coefficients can be interpreted in terms of percentage changes in annual income (parameters in Tables 3.3 and 3.4 can be interpreted in this way).
[17] Borrowers who had not entered repayment by 2009 were dropped from the sample because they were coded in B&B:08/12 as having a debt to income ratio of zero. Monthly debt payments greater than 200% of the borrower's monthly income were re-coded at 200% by B&B:08/12.
[18] Models using this variable as the DV included only individuals who were working one full-time (FT) job as of 2009.
[19] I also initially included a squared term for age in earlier iterations of the models, but it was not significant – suggesting that a linear basis expansion on age was not necessary. Consequently, the squared term for age was omitted from the models shown here.
[20] The variable measured parents' annual income in 2008 for dependents, and respondents' annual income in 2008 for participants who were independent of their parents.

began and completed college, the percentage deviation in years from college entry to college completion (measured as the percentage deviation from the standard four-year completion time)[21]. Moreover, college selectivity, participants' participation in federal TRIO programs (a proxy for low income, first-generation college student status), whether a respondent transferred colleges before receiving their bachelor's degree, and if so, the number of times that they transferred were controlled for. Covariates measuring academic achievement, such as high school[22] and college grade point average, as well as SAT score (1600 scale), were also included. College major was also controlled for (see Appendix 3.A for population-weighted summary statistics and greater detail about major groupings). In addition, summary statistics by ethno-racial group are displayed in Table 3.2. Median and mean income for all ethno-racial groups are higher among for-profit bachelor's degree holders than their peers with degrees from non-profit schools.

Regional controls were employed to adjust for region-related variance in outcomes. These controls included whether a respondent lived in a metropolitan statistical area (MSA), as well as which region of the US respondents lived in. Employment and occupation-related heterogeneity were captured by measures of the percent of time respondents spent unemployed since earning their bachelor's degree, the number of hours worked per week, and the number of jobs that respondents held since earning their bachelor's degree. In addition, current occupation type (e.g., Healthcare,

[21] Given by $\left[\frac{((\gamma_i-\eta_i)-a)}{a}\right]100$, where γ_i is age at college completion for individual i , η_i is age at college entry for individual i, and a is the constant four (e.g., four years is assumed to be the standard time to degree). Negative values (i.e., respondents that took less than four years to get their bachelor's degree) were re-coded to 0% (i.e., four years).

[22] Unlike some other NCES datasets (e.g., Kirui and Kao 2018), a continuous measure of high school grade point average is not available in B&B:08/12.

Education, Sales, etc.) was controlled for (see Appendix 3.B for population-weighted summary statistics and occupation type groupings).

Model Specification.

Listwise deletion was used to treat missing data on all variables for all models on pooled data. When data were disaggregated by racial groups, multiple imputation was used instead of listwise deletion.[23] This was done to address concerns about statistical power due to small within-group sample sizes for some ethno-racial groups. To account for the multistage, non-random sample design, bootstrap replicate weights were used to compute bootstrap variance estimates that adjust for the non-stochastic nature of the sample design. Analysis weights, which adjust for nonresponse bias, were also used. Data from the 2007-08 National Postsecondary Student Aid Survey (NPSAS:08) and the 2009 wave of B&B:08/12 were used for my analysis.

After treating missing data and applying the appropriate bootstrap replicate and analysis weights, I estimated a series of nested models, each with one of four predictors: 1) the natural logarithm of annual income on a pooled sample (Models 1.1 through 1.5, and 2.1 through 2.5) and stratified by ethno-racial group (Table 3.5), 2) monthly debt to monthly income ratio (Models 3.1 through 3.5), 3) likelihood of switching jobs by 2009 (Models 4.1 through 4.5), and 4) employment type (Model 5). Nested models (denoted .1 through .5) were nested in the same order for each of the least-squares and binomial logit models. College type was the sole predictor in ".1" models. Demographic and household characteristics (e.g., age, parental income and homeownership, gender, race/ethnicity,

[23] Fully conditional specification with M = 40 datasets was used.

maternal college-going, marital status, and whether respondents had children) were added in ".2" models.

College characteristics & cognitive measures (e.g., Age (at college entry and completion), % deviation from college entry to completion, SAT score (1600 scale), high school and college grade point average, college transfer, college selectivity, TRIO eligibility, and aggregated college major (see Appendix 3.A) were added in ".3" models. Regional controls were included in ".4" models (e.g., whether respondents lived in a metropolitan statistical area (MSA)), and their residence in one of four aggregated regions of the US (see Table 3.1)[24]. Lastly, measures of employment and occupation were added in ".5" models (e.g., % of time spent unemployed since earning a bachelor's degree, hours worked per week, number of jobs held since earning a bachelor's degree, number of jobs currently held, and aggregated occupation type). Details on aggregated occupation type measures can be found in Appendix 3.B.

To aid in interpretation and due to space constraints, nested models were not used for Model 5. Instead, all covariates were included in a single model. Coefficients for certain variables are not included in results tables (Tables 3.3 through 3.8) also due to space constraints. Instead, a "Yes" or "No" is included to indicate whether or not they are controlled for in a particular model. Models 1.1 through 1.5 (Table 3.3) and 3.1 through 3.5 (Table 3.6) exclude respondents who transferred institutions before earning their

[24] Regions were aggregated as follows: 1) Northeast includes CT, ME, MA, NH, RI, VT, DE, DC, MD, NJ, NY, & PA; 2) Midwest includes IL, IN, MI, OH, WI, IA, KS, MN, MO, NE, ND, & SD; 3) South includes AL, AR, FL, GA, KY, LA, MI, NC, SC, TN, VA, & WV; 4) West includes CO, ID, MT, UT, WY, AZ, NM, OK, TX, AK, CA, HI, NV, OR, & WA. These regional classifications are consistent with previous literature on this topic (Denice 2015).

bachelor's degrees.[25] Models 1.1 through 1.5 and 2.1 through 2.5 (Tables 3.3 and 3.4) include respondents who are working multiple jobs (number of jobs currently held is controlled for).[26] Models 4.1 through 4.5 (Table 3.7) exclude respondents who did not work a single, full-time job in 2009. The sample was restricted to mitigate potential bias related to the outcomes.

RESULTS

In total, I estimated four sets of five nested models (three least squares and one binary logit), one set of OLS models disaggregated by ethno-racial group, and one multinomial logit model with a full array of predictors. The results of these models are displayed in Tables 3.3 through 3.8. Since the response variable in Models 1.1 through 1.5, 2.1 through 2.5, and the models disaggregated by ethno-racial group (Tables 3.3 through 3.5) was in log units (i.e., log income), coefficients were exponentiated to aid interpretation. Exponentiated coefficients are displayed in the results for Models 4.1 through 4.5 and 5 (Tables 3.7 and 3.8). Only differences that have reached at least statistical significance at $p < .10$ are reported here. About 4.3% of the unrestricted sample (approx. 600 respondents) earned their bachelor's degrees from for-profit schools. Results were disaggregated by ethno-racial group only for models where the outcome was annual earnings; this was because convergence failures prevented other models disaggregated by ethno-racial group from being estimated.

[25] This was done because there is no variable in B&B:08/12 that identifies whether a respondent transferred between college types (e.g., from for-profit to non-profit, etc.). This was also done to isolate the effect of attending a for-profit institution throughout respondents' undergraduate years vs. having a bachelor's degree from a for-profit institution.

[26] Models that constrained the sample to only those working a single job were also run, but they are not displayed here. Models that did not restrict the sample in this way were shown to have higher predictive power (i.e., adjusted R^2 values), and the effects on the outcome (log income) did not substantively change.

The adjusted effect of college type on annual earnings.

Tables 3.3 and 3.4 display the results of Models 1.1 through 1.5 and 2.1 through 2.5, respectively. These models estimated the effect of college type on the natural logarithm of annual income, controlling for a host of demographic, educational, regional, and employment characteristics. Exponentiated coefficients, which are displayed in Tables 3.3 and 3.4, can be interpreted in terms of percentage changes[27] in annual income for a given predictor, after adjusting for the effects of all other predictors. To reduce transfer-related noise, respondents who transferred between any two (or more) institutions before receiving their bachelor's degree were included in the sample in Models 1.1 through 1.5 but excluded from the sample before estimating Models 2.1 through 2.5. B&B:08/12 does not have any variables available that specifically indicate whether a respondent has transferred between college types (non-profit to for-profit or vice versa), so excluding transfers is an imperfect way of reducing heterogeneity related to transfer between college types.[28]

Models 1.1 through 1.5, displayed in Table 3.3, include transfer students in the sample from which the estimates are generated. Model 1.1 suggests a moderately significant ($p < .10$) positive effect of holding a for-profit bachelor's degree on earnings. Model 1.1 indicates that employees with for-profit bachelor's degrees earn roughly 22% more than their peers with non-profit degrees; however, this model's only predictor is college type and it has little predictive power (Adj. R2 = .0018). The effect of holding a for-profit bachelor's degree remains positive but statistically insignificant in Models 1.2

[27] Percent deviation given by: $(exp^{\beta} - 1)\ x\ 100$

[28] This is a flawed method to be sure; excluding all transfers excludes transfers who did not transfer across college type.

through 1.4, suggesting that demographic, household, college, and regional effects explain away the statistically significant positive effect found in Model 1.1. In Model 1.5, which adds employment/occupational controls, the positive and moderately significant effect of holding a for-profit bachelor's degree on annual earnings returns. Model 1.5 suggests that employees with for-profit degrees have annual earnings that are about 13% higher than their peers with degrees from non-profit schools.

The full set of covariates in Model 1.5 explains nearly half of the variance in respondents' annual income (Adj. R2 = .4846). The addition of employment and occupation-related controls in Model 1.5 explain almost 30% of the variance in respondents' annual earnings (.4846 [Adj. R2 (M1e)] - .1855 [Adj. R2 (M1d)] = 0.2991); given that the outcome is earnings, this is not all that surprising. Moreover, college characteristics and cognitive measures appear to explain about 11% of the variance in annual income (.1795 [Adj. R2 (M1.3)] - .0701 [Adj. R2 (M1.2]) = .1094). These models suggest that employees with for-profit bachelor's degrees earn more than their peers with degrees from non-profit schools. This finding is notable because it is counter to much of the existing literature (Deming et al. 2012; Denice 2015).

However, when transfers are excluded from the sample, a different story begins to emerge. Models 2.1 through 2.5 (Table 3.4) display nested model estimates that excluded students with one or more transfers from the sample. The models show a consistent pattern; employees with for-profit bachelor's degrees do not earn more than their peers with non-profit degrees. The models suggest a negative effect of holding a for-profit bachelor's degree on income (although it's important to note that it's not significantly different from zero). Models 2.1 through 2.5 suggest that the earnings of employees with

for-profit bachelor's degrees do not significantly differ from those of their peers with non-profit bachelor's degrees. Models 2.2 through 2.5 also have more predictive power than their Model 1 counterparts. The covariates in Model 2.5 jointly explain over half of the variance in respondents' annual income (Adj R2 = .5216), compared to about 48% of the variance in Model 1.5 (Adj R2 = .4846). Excluding transfer students from the sample appears to give the models more predictive power. Like in the first set of models (Models 1.1 through 1.5), occupation and employment-related controls explain around 30% of the variance in annual income (.5216 [Adj. R2 (M2.5)] - .1974 [Adj. R2 (M2.4)] = 0.3242)). Similar to the first set of models, college characteristics and cognitive measures jointly appear to explain around 10% of the variance in annual earnings (.1884 [Adj. R2 (M2.3)] - .0929 [Adj. R2 (M2.2]) = .0955). I also ran ancillary models[29] which produced estimates based on a restricted sample of only those respondents who held one full-time job. These models showed a similar pattern to the models described earlier; the models that include transfers show a significant positive effect while those that excluded them did not. I do not display the results from these models here because they both had lower predictive power than the models displayed in Tables 3.3 and 3.4 (Adj. R2 = .3200 and .3914, respectively).

Ethno-racial heterogeneity in the effect of college type on annual earnings.

Table 3.5 displays the adjusted effects of college type on annual earnings, disaggregated by ethno-racial group. Among Whites and Latinos, the effect of holding a for-profit bachelor's degree on earnings is insignificant. However, among Blacks and Asians, this effect is significant and negative. Among Blacks, the model suggests that

[29] Ancillary model results not displayed.

those who hold for-profit bachelor's degrees earn about 38% less than their peers with non-profit bachelor's degrees. For Asians, this negative effect is both highly significant ($p < .001$) and the largest in magnitude. Among Asians, the model suggests that those who hold for-profit bachelor's degrees earn about 57% less than their peers who hold non-profit bachelor's degrees. For Whites, the full array of covariates jointly explain about 47% (Adj. R2 = .4705) of the variance in earnings. For Latinos, they explain about 46% (Adj. R2 = .4611), for Blacks about 58% (Adj. R2 = .57766), and for Asians about 57% (Adj. R2 = .5742). Figure 3.1 displays the exponentiated coefficients highlighting ethno-racial differences in predicted income among for-profit bachelor's degree holders. Displayed in Table 3.2 is the sample median income among each ethno-racial group; across the board, median income is higher among those with for-profit degrees than their same-race peers with non-profit degrees. Figure 3.1 highlights the ethno-racial differences in predicted income among for-profit bachelor's degree holders. Within each ethno-racial group, plotted exponentiated coefficients are compared to non-profit bachelor's degree holders.

The adjusted effect of college type on monthly debt to monthly income ratio.

Table 3.6 displays the results of Models 3.1 through 3.5. These models estimated the effect of college type on monthly debt to monthly income ratio, controlling for a host of demographic, educational, regional, and employment characteristics as in Models 1.1 through 1.5 and 2.1 through 2.5. This response variable was calculated by taking a respondent's monthly loan payment as a percentage of their monthly income. Respondents who met any of the following criteria were excluded from the sample: 1) did not borrow for their college education 2) had a balance of zero on their accounts, 3) had

not entered repayment on their loans as of 2009, or 4) did not earn income in 2009. The sample was further restricted to only those respondents who worked one full-time job in 2009, and those who did not transfer institutions before earning their bachelor's degree.

Model 3.1, the base model, estimates a positive but statistically insignificant effect of college type on debt to income ratio; from this, we can infer that although the effect is positive, it is not estimated to be significantly different from zero. Moreover, this model explains less than 1% of the variance in graduates' debt to income ratio (Adj. R2 = .003). With the addition of covariates measuring family background and demographic traits in Model 3.2, a moderately significant positive effect of college type on debt to income ratio develops; this suggests that, on average, employees holding for-profit bachelor's degrees a higher debt to income ratio than their peers with non-profit bachelor's degrees (effect size: 5.340). When adjusting for college characteristics and cognitive measures, the significance of this effect disappears. Moreover, Model 3.2 suggests that around 19% of the variance in debt to income ratio can be jointly explained by college characteristics and cognitive measures (.2392 [Adj. R2 (M3.3)] - .0499 [Adj. R2 (M3.2)] = 0.1893)).

When adjusting for regional variation in Model 3.4, the effect of college type on debt to income ratio remains insignificant. When controlling for the full gamut of covariates in Model 3.5, including employment and occupation-related variance, the statistically significant positive effect for college type reemerges (effect size: 4.657). This suggests, again, that employed graduates with for-profit bachelor's degrees have a higher average debt to income ratio than their peers with non-profit bachelor's degrees. The covariates in Model 3.5 jointly explain about 36% of the variance in employed graduates'

debt to income ratio (Adj R2 = .3572). Moreover, employment and occupation-related measures jointly explain about 11% of the variance in graduates' debt to income ratios (.3572 [Adj. R2 (M3.5)] - .2476 [Adj. R2 (M3.4)] = 0.1096)).

The adjusted effect of college type on the likelihood of switching jobs and the likelihood of holding different types of employment.

Table 3.7 displays the odds ratio results of Models 4.1 through 4.5, which estimate the effect of college type on the likelihood of graduates switching jobs at least once within two years after they received their bachelor's degrees, controlling for demographic/household, college characteristics and cognitive measures, and regional, occupation, and employment-related heterogeneity. For these models, the sample was restricted to only those respondents who had one full-time job in 2009. The base model, Model 4.1, estimated just the effect of college type on the likelihood of switching jobs; Model 4.1 shows a positive but insignificant impact of holding a for-profit bachelor's degree on changing jobs. Model 4.2, which controls for demographic and household characteristics, in addition to college type, also shows a positive but insignificant effect of holding a for-profit bachelor's degree on switching jobs.

College characteristics and cognitive measures are added to the controls in Model 4.3. With the addition of these covariates, the magnitude of the effect of college type increases substantially (OR: 1.138 (though not significantly different from 1) in Model 4.2; OR: 4.032 in Model 4.3) and becomes statistically significant. Model 4.3 suggests that employees with bachelor's degrees from for-profit schools are three times more likely [(4.032-1) x 100 = 303.2%] to switch jobs at least once within two years of graduating than their peers with bachelor's degrees from non-profit schools. Models 4.4

and 4.5 show similar results, with the magnitude of the effects increasing with the addition of more predictors and the statistical significance of the effects remaining. In Model 4.4, employees with for-profit bachelor's degrees are predicted to be almost 3.2 times more likely [(4.156-1) x 100 = 303.2%] to switch jobs than their peers with non-profit pedigrees. In Model 4.5, graduates holding for-profit bachelor's degrees are predicted to be nearly four times [(4.896-1) x 100 = 389.6%] more likely to switch jobs than their non-profit peers. The Archer-Lemeshow test is an adapted version of the Hosmer-Lemeshow test, which estimates the goodness of fit for complex survey designs (Archer, Lemeshow, and Hosmer 2007). Figure 3.2 displays the predicted probability of switching jobs at least once within two years after graduation by college type; the predicted probabilities shown in Figure 3.2 were derived from Model 4.5.

Table 3.8 displays the odds ratio results of Model 5, which relies on a multinomial logit model to estimate the likelihood of holding different types (e.g., part-time, full-time, etc.) of employment a year after graduation. Although the outcome is ordinal, I opted for a multinomial logit model over an ordered logit model because the data violated the proportional odds assumption imposed by the latter model ($\chi^2 = 53429.31\ (88);\ p < .000$).[30] After controlling for demographic/household, college and cognitive, regional, and employment/occupation-related heterogeneity. Model 5 shows a positive, statistically significant effect for college type on holding a part-time job instead of a full-time job (OR: 2.722). Moreover, these results suggest that a graduate with a for-profit bachelor's degree is 1.7 times more likely [(2.722-1) x 100 = 172.2%] to hold a part-time job instead of a full-time job than their peers who hold non-profit bachelor's degrees. Figure 3

[30] Adherence to the proportional odds assumption was tested via the Brant test (Brant 1990).

displays the adjusted odds ratios highlighting the likelihood of holding different types of employment among for-profit bachelor's degree holders.

Although I attempted to examine ethno-racial heterogeneity in the effect of college type on debt-to-income ratio, and employment type and instability, modeling these outcomes was not possible due to convergence failures. Future research should evaluate the degree to which ethno-racial heterogeneity manifests in the relationship between college type and these outcomes.

Robustness Checks.

Propensity Score Covariate Adjustment. I relied on propensity score methods to test the robustness of my results. When disaggregating the sample by ethno-racial groups, the resulting subsamples were too small to allow for the formation of adequate matches in all ethno-racial subgroups except Whites. Moreover, because the subsamples were already small, additional attrition resulting from unmatched pairs would have been particularly unsavory. I, therefore, chose to forgo full matching and instead employ the small sample propensity score methods recommended by Guo and Fraser (2009), Holmes (2013), and Holmes and Olsen (2010). Holmes and Olsen (2010) suggest that rather than losing additional cases due to unmatched propensity scores, in small samples, when attrition is particularly undesirable, the propensity score can be computed and then included in the analysis model as a covariate.

Covariate balance was evaluated using a method set forth by Holmes and Olsen (2010) and Guo and Fraser (2009) for assessing balance with small sample propensity score methods. Covariate balance is displayed in Appendix 3.C. Balance was evaluated via a series of unweighted and weighted one-way ANOVAs and bivariate log-linear

models, using computed propensity score weights. In the pooled sample, balance was achieved on all but five covariates: Age, Parental Income, Marital Status, Age at College Completion, the deviation from College Entry to Completion. Balance was also assessed within each ethno-racial stratum (NH Whites, NH Blacks, Latinos, & Asians) and largely mirrored the covariate balance in the pooled sample. However, balance was not achieved on the following covariates - for NH Blacks: Marital Status; for Latinos: Lives in MSA, Northeast, and West; and for Asians: Marital Status, SAT Score, Lives in Midwest, and Military Service.

Appendix 3.D displays the propensity score-adjusted earnings results in the pooled sample, and each ethno-racial stratum. The propensity score covariate adjustment method does not substantively change the earnings results. In the combined sample, the effect of holding a for-profit bachelor's degree on annual earnings remains insignificant. Among Blacks and Asians, the significant and adverse effects of holding a for-profit bachelor's degree remain intact, with only slight fluctuations in magnitude and, for Asians, significance. This suggests that the impact of holding for-profit bachelor's degrees persist even after non-random selection is accounted for. Though the effect of college type on the debt-to-income ratio in Model 3.5 is only significant at the $a < .10$ level, when accounting for selection through propensity score adjustment, this effect becomes significant at the $a < .05$ level. The positive statistically significant effect of college type on the likelihood of switching jobs remains intact after propensity score covariate adjustment (the significance level holds, and the magnitude decreases slightly by .4). Moreover, the positive effect of college type on the likelihood of holding a part-

time instead of a full-time job increases in magnitude and holds its significance after adjustment.

Measuring wages. Scholars who study the effect of college type on earnings sometimes operationalize earnings as hourly wages rather than annual income (Cellini and Chaudhary 2014; Denice 2015). B&B:08/12, however, does not include a raw measure of hourly wages. To remedy this, I generated a measure of hourly wages[31] derived from other available measures in the dataset. By doing this, I aimed to determine whether the results were influenced by these differences in the measurement of the outcome. I then ran a series of ancillary models[32] which substituted that measure for annual income. Results of these models did not differ meaningfully[33] from the results reported here, implying that in this context, measuring earnings as gross annual income rather than total hourly wages is largely inconsequential.

Considering the Counterfactual. Interested parties thinking about the effects of for-profit attendance and degree-holding may wonder what the alternatives would be if students who attended for-profit colleges did not. Though I do not engage in a formal impact evaluation, the existing body of literature can help answer this question. My results are clear on how graduating from four-year BA granting non-profit schools effects outcomes, but there are other possible routes to a degree. Low SES students who otherwise would not have attended college may be more likely to complete a bachelor's

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[31] A measure of hourly wages was given by $\left({}^{\gamma_i}/_{a}\right)\Big/_{\eta_i}$, where γ_i is the value of gross annual income for individual i, η_i is the number of hours worked per week for individual i, and a is the constant fifty-two (e.g., fifty-two weeks in one year).

[32] Ancillary models available on request.

[33] In the models with hourly wages as the dependent variable, the coefficient for college-type (i.e., for-profit) loses the marginal significance shown in Model 1.5 (Table 3.3)

degree (presumably from a non-profit 4-year college) if they attend community colleges (Brand, Pfeffer, and Goldrick-Rab 2014). Since most students at for-profit colleges are low SES (Cottom 2017; DeLuca et al. 2016; Deming et al. 2012, 2013), Brand et al. (2014)'s work suggests that they may have better outcomes by attending community colleges. Students who attend for-profit colleges may, alternatively, choose not to attend any college. However, research suggests that for-profit colleges compete mostly with community colleges for their students (Deming et al. 2012, 2013) and that if for-profit schools weren't an option, their students would likely attend community colleges instead (Chung 2012; DeLuca et al. 2016; Holland and DeLuca 2016; Iloh and Tierney 2014).

DISCUSSION AND CONCLUSION

In sum, I found that while in the aggregate for-profit bachelor's degree holders' annual incomes do not significantly differ from those of their peers with non-profit degrees, there is notable ethno-racial heterogeneity in this finding. Among Blacks and Asians, there is a robust earnings penalty among for-profit bachelor's degree holders relative to their peers. Asians, in particular, have the most substantial earnings penalty associated with holding a for-profit bachelor's degree. Among Whites and Latinos, however, there is no evidence of such a penalty.

Among Blacks, extant work suggests a complex interaction between race and college type/quality on the job market. Evidence suggests that a *double penalty* exists even among black job seekers with elite "high status" bachelor's degrees. The theory of a *double penalty* holds that even the effects of a "high status" (e.g., Ivy League, etc.) degree do not entirely counteract the importance of race in the labor market (Gaddis 2014). I argue that this *double penalty* operates among both high-status and low-status institutions

and can help explain the earnings penalty among Black for-profit degree holders. If the effects of high-status degrees cannot fully counteract the importance of race on the job market, then it follows that the impact of low-status degrees would magnify these same effects. Moreover, this leads to a double jeopardy scenario where Black job seekers experience penalties stemming from both race and college-type.

There are several explanations for the earnings penalty among Asian-American for-profit degree holders. Perhaps the most apparent explanation concerns SES differences among Asian-American groups (e.g., East Asian/Southeast Asian origin) that are obscured under a broad Asian-American category. Unfortunately, B&B:08/12 does not disaggregate the Asian-American category. Moreover, Table 3.2 suggests that in the sample, Asian-American for-profit graduates' median incomes are *higher* than their peers with non-profit degrees. In addition, SES is controlled for, and selection bias related to SES is minimized through propensity score covariate adjustment. Another explanation deals with how employers view the for-profit credentials of Asian-American job seekers. Fueled by the persistence of the model minority myth, employers may exact a penalty on Asian-American job seekers who, in their mind, do not conform to it (e.g., by having a "low-status" for-profit degree). This theory is in line with extant research suggesting that some educators and employers may hold Asian-American students and employees to higher standards (Lee 1994; Ng 2009). B&B:08/12 does not have the requisite data to test the veracity of these theories, but this is an area deserving of further study.

The lack of a for-profit earnings penalty in the pooled sample masks considerable heterogeneity by race and ethnicity. Other work that has found evidence of an earnings penalty at the baccalaureate level may have merely captured ethno-racial heterogeneity

and attributed it to for-profit degree holders in the aggregate. My results suggest that the effect of a for-profit degree on earnings is not equal across racial or ethnic groups. Ethno-racial heterogeneity was only observed when transfer students were excluded, but the estimates on which it is based jointed have higher predictive power in explaining variance in annual income. That said, when transfer students are included, the estimates suggest that overall, employees with for-profit bachelor's degrees may earn slightly more than their non-profit peers. Given that this finding runs counter to much of the extant literature (Deming et al. 2012; Denice 2015), it seems more of a data artifact than a generalizable finding. Moreover, when transfer students are included, ethno-racial heterogeneity in the outcome is explained away. Although models including transfers have slightly less predictive power than models excluding them, transfer inclusive models still explain nearly half of the variance in annual income. Additional work is needed to explain the relationship between transfer and ethno-racial heterogeneity. Disparities in the results between transfer-exclusive and transfer-inclusive models suggest that there is some property of transfer students that contributes to these differences. My decision to exclude transfer students from some models was borne of a desire to differentiate the effect of attending a for-profit college from first postsecondary enrollment through to completion from that of merely holding a for-profit degree, regardless of the path that was taken to attain it. In theory, some students who graduated with for-profit degrees may have experience with non-profit higher education as well; I wanted to draw a distinction between these students and those for whom for-profit institutions have been their sole experience in higher education.

The majority of work on the labor market outcomes of for-profit graduates has focused narrowly on their earnings (Cellini and Chaudhary 2014; Darolia et al. 2015; Deming et al. 2016, 2012; Denice 2015; Lang and Weinstein 2012). However, I argue that earnings do not paint a complete picture of the financial stability and well-being of these graduates. Instead, we should move toward more comprehensive metrics of their financial lives. Previous work has shown that students with for-profit credentials have higher average student debt burdens than their non-profit counterparts (Baum 2011; Belfield 2013; Cellini and Darolia 2017; Cottom 2017; Deming et al. 2012, 2013; Harding et al. 2010). However, little of this work has endeavored to investigate this in the context of earnings and the impact that it has on discretionary income. Discretionary month-to-month income plays a significant role in the lives of many Americans, particularly those of lower SES backgrounds like for-profit graduates.

For-profit graduates who are working a single full-time job, in repayment on their student loans, and who stayed in a single institution throughout their college career are estimated to have a higher monthly debt to income ratio, even after controlling for their annual income. The models that these conclusions are based on have high predictive power; they predict more than one-third of the variance in debt to income ratios. This means that for-profit bachelor's degree graduates have, on average, less monthly discretionary income than their peers with non-profit bachelor's degrees. This means less money for monthly expenses such as rent, bills, childcare, and food. Though for-profit graduates' earnings equal those of their peers, a lower fraction of those earnings are available to them for expenses outside their student debt. This effect is likely conservative as it excludes graduates who are unemployed or underemployed, as well as

those whose student debt is in deferral, forbearance, or default (and whose loans are likely accruing interest - further increasing their debt burdens).

An important source of financial security is holding a stable job. However, for-profit bachelor's degree holders are nearly four times more likely to experience employment instability after graduation than their non-profit peers even after adjusting for a host of covariates. That is, they are more likely to switch jobs multiple times within a short period. This form of employment instability introduces another form of uncertainty into the lives of graduates with for-profit bachelor's degrees. Another important component of financial stability is the type of job or jobs that a person holds. Unemployment and underemployment can both have consequences for financial stability. I have found that for-profit bachelor's degree holders are almost twice as likely to be underemployed (i.e., working one part-time job instead of one full-time job) than their peers with non-profit bachelor's degrees. Underemployment is a large factor in contributing to financial insecurity. To be sure, underemployment is a notable phenomenon among recent college graduates with non-profit degrees, but college type-related variance was accounted for in the model. Still, there were marked, significant differences in the likelihood of different levels of employment intensity by college type. Underemployment is a broad concept that does not capture the varying underlying reasons that people are underemployed. Sometimes people choose part-time employment because they have competing constraints on their time (e.g., childcare or eldercare) or are otherwise unable to work full-time (e.g., disability); these constraints might be more common among for-profit graduates than non-profit graduates (Austin and McDermott

2003). More work is needed here to separate those who are underemployed due to labor market constraints and those that elect to be for personal reasons.

My results suggest that the impact of holding a for-profit degree on labor market outcomes is not stable across ethno-racial groups. At a time when the majority of bachelor's degrees granted to Black students are from for-profit colleges (Cottom 2017), this finding has significant implications for racial stratification in the labor market. Although I was unable to investigate this heterogeneity beyond earnings, future work should test the degree to which ethno-racial disparities in earnings extend to other outcomes. Moreover, gross earnings do not paint a complete picture of labor market outcomes. In an era of rising student debt, I argue that research that focuses solely on post-graduate gross earnings as a measure of financial security misses the mark, particularly for for-profit graduates. Instead, we should rely on more comprehensive measures of employment to assess financial stability and security. This is particularly true for for-profit graduates, who hold, on average, more student debt (Baum 2011; Belfield 2013; Cellini and Darolia 2017; Cottom 2017; Deming et al. 2012, 2013; Harding et al. 2010) and may have more constrained employment choices due to outside factors (e.g., childcare, eldercare, other competing family responsibilities). Scholars must stop treating simple measures of gross income as wholly determinative of labor market inequality. Instead, we should rely on more comprehensive measures that more accurately capture the multidimensional nature of income inequality and its relationship to social inequality.

CHAPTER 4: A WAY FORWARD

This dissertation has examined how for-profit colleges impact educational inequality, and social stratification interacts with points along the trajectories taken by many students as they enter and progress through college, and transition to the workforce. In chapter one, I found that the reasons that high-achieving students choose for-profit education are not entirely dissimilar from those cited by their more modestly achieving peers. Moreover, I found that a dearth of parents' and students' social capital may play a role in high achieving students choosing for-profit education. Perhaps just as important as the factors that "push" students toward for-profit education, are those that "pull" students in (Deil-Amen et al. 2019). Although I could not address these adequately with my data, I believe that going forward, an examination of the relationship between these "push" and "pull" factors is necessary. Understanding how these social forces work together to promote the choice of for-profit education will give scholars a more complete understanding of the college choice process among for-profit students. In chapter one, I also suggested that the processes of status acquisition may not be as uniform as previously thought. More work that looks at how the relationship between status-group participation and academic achievement engenders status acquisition will be important in determining whether, as I argue, benefits gained from status-group participation are truly uneven.

In chapter two, I found that students who begin college at two-year for-profit institutions are less likely to successfully transfer to any four-year college and ultimately get their bachelor's degree. Further, even among students who expressed planning to transfer to a four-year college when they began at two-year schools, those who attend

two-year for-profit schools are less likely actually to follow through on their transfer plans. These findings call into question whether the transfer pathway functions at all for for-profit students. I argue that these observations are an instance of an institutional cooling out of the expectations of for-profit college students. I observe that barriers to fluid transfer between institutions of higher education – particularly those pertaining to course credit transferability – can lead to cooling out of students' expectations. To be sure, I am not arguing in this chapter that for-profits are solely responsible for this cooling out effect. Indeed, I point to institutionalized barriers to transfer mobility that were not solely erected by for-profit schools. Just as important, however, I also point to the micro-level ways in which for-profit college surrogates may contribute to this cooling out effect. At a macro-level, I also point to how my findings complicate the relationship between status attainment and educational expansion.

In chapter three, I found that, in the aggregate, there was no evidence that for-profit bachelor's degree holders earned less than their peers with bachelor's degrees from non-profit schools. However, when broken down by race, Black and Asian holders of for-profit bachelor's degrees earned less than their same-race counterparts with non-profit credentials. Moreover, I found that graduates with for-profit bachelor's degrees had a higher average student debt-to-income ratio, were more likely to experience short-term employment instability, and were more likely to be underemployed. Although there needs to be much more work to say anything conclusive, I postulate that these employment outcomes may be evidence of that for-profit credentials may emit negative signals to employers. Moreover, regarding the intersection of race and for-profit colleges, I argue that disparities in earnings among Black credential holders is an inversion of Gaddis'

(2014) notion of the "double penalty" whereby the combined negative effects of race and type of college credential are magnified at the low end of the higher education status hierarchy. Similarly, I argue that employers may sanction what they view as non-conformity to the model minority stereotype - exacting a penalty against Asian-American for-profit credential holders who they perceive as holdings “low-status” degrees.

In conclusion, I would like to return to the definition of a for-profit college that I laid out in the introduction to this dissertation. I defined for-profit colleges as institutions that are owned and operated by enterprises that return excess revenue to their shareholders or private owners in the form of profit. Throughout this dissertation, I have used this definition to refer, perhaps euphemistically, to a *particular type* of for-profit college. However, in actuality, defining an institution by its profit status is a complicated and messy endeavor. In the changing landscape of American higher education, my original definition no longer accurately represents the evolution of institutions of higher education that we are witnessing in the 21st century.

All institutions engage in revenue-generating activities; the distinguishing factor has conventionally concerned what an institution does with any revenue left over after it covers its operating costs. Moreover, institutions of higher education are increasingly blurring the lines between what has conventionally been considered "for-profit" and "non-profit." Over the last decade, colleges and universities with non-profit status have increased their presence in spaces once seen as the domain for for-profits – such as offering online courses (California Association of Private Postsecondary Schools 2017). There are also multiple instances of for-profit college operators explicitly changing their institutional status to non-profit, typically to gain access to more federal education

funding and/or avoid the negative stigma associated with status as a for-profit college (Halperin 2013). To add to the confusion, partnerships between non-profit colleges and for-profit education companies have been on the rise (e.g., Purdue University and Kaplan, Inc. creating Purdue University Global) (California Association of Private Postsecondary Schools 2017). For-profit education technology companies further complicate the definition, as they have created and vastly expanded Massive Open Online Courses (MOOCs) (e.g., Udacity, Coursera, edX, etc.). Moreover, many of the courses developed for these platforms are borne out of partnerships with non-profit colleges and universities. The concept of what constitutes a for-profit institution is not static, and the connotations that have typically been associated with for-profit institutions may not map neatly onto nascent educational mediums. As many non-profit colleges and universities continue to face myriad financial and budgetary issues, partnering with and/or emulating for-profit educational organizations to generate additional revenue will continue to be a tantalizing proposition for them. It remains to be seen how these changes in the higher education landscape will impact educational and social inequality.

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Table 1.1 Summary statistics of dependent and independent variables, Wave 1 (population weighted estimates), ELS 2002 Study Sample

	Pooled Sample (n ≃ 10,500)		Non-Profit (n ≃ 9,900)		For-Profit (n ≃ 530)	
	Pct./Mean	SE/SD	Pct./Mean	SE/SD	Pct./Mean	SE/SD
Main Reason Chose School:						
Program of Study	24.52	0.42	22.64	0.42	59.66	2.15
Reputation of Program/Faculty/School	13.30	0.33	13.61	0.34	7.83	1.17
Cost/affordability/financial reasons	20.38	0.39	21.35	0.41	2.67	0.70
Location	23.45	0.41	24.15	0.42	10.32	1.33
Personal or family reasons	8.65	0.27	8.65	0.28	8.60	1.22
Another reason	9.70	0.29	9.56	0.29	10.89	1.36
For-Profit College	5.01	0.21	-	-	-	-
Race/Ethnicity:						
Non-Hispanic White	56.95	0.40	61.54	0.49	47.05	2.25
Non-Hispanic Black	13.25	0.27	11.30	0.32	20.48	1.81
Hispanic/Latino	14.54	0.29	11.27	0.32	20.89	1.83
Asian/Asian American	9.57	0.23	10.92	0.31	6.28	1.09
American Indian/Alaska Native	0.85	0.07	0.54	0.07	0.81	0.40
Two or more races	4.82	0.17	4.40	0.21	4.46	0.93
Parents' Education:						
No College	58.85	0.36	49.08	0.43	71.65	2.15
Bachelor's Degree	22.63	0.33	26.83	0.45	19.23	1.77
Advanced Degree	18.50	0.31	24.06	0.43	9.10	1.29
Female	50.20	0.40	54.30	0.51	54.14	0.22
SES Composite	0.03	0.74	0.23	0.72	-0.19	0.03

# Academic Risk Factors by 10th Gr.:						
None	41.90	0.45	49.88	0.56	36.94	2.50
One	31.79	0.43	31.76	0.52	30.83	2.43
Two	15.93	0.33	12.87	0.38	16.94	1.97
Three	6.97	0.23	4.09	0.22	10.83	1.64
Four or more	3.39	0.17	1.39	0.13	4.44	1.08
% Minority of School	32.37	32.12	27.91	30.44	42.49	36.25
Non-Native English Speaker	16.96	0.30	15.43	0.37	17.24	1.70
Parent(s) Non-Native English Speakers	16.18	0.32	15.76	0.39	16.26	1.82
First Generation Immigrant	10.66	0.26	9.89	0.32	10.28	1.48
% Students in College Prep Courses in 10th Gr.	61.99	33.32	67.03	32.83	58.63	33.77
Discussed College with Parent(s)	95.06	0.18	98.21	0.13	94.74	1.06
Had Children in 10th Grade	0.84	0.08	0.61	0.08	1.3	0.58
Parent(s) involved in PTO	36.62	0.43	37.46	0.53	32.8	2.42
# Months Between HS and College	3.82	3.84	3.68	3.6	6.43	6.34
Extracurriculars in HS	71.53	0.38	79.07	0.41	57.74	2.27
HS GPA (Mean/SD)	2.63	0.88	2.96	0.77	2.27	0.69
Standardized Test Composite Score	50.65	9.88	53.82	9	46.68	8.53

Note: Values may not sum to 100 due to rounding. Values displayed are percentage/proportion estimates and standard errors unless marked Mean/SD.

Table 1.1a. Population-weighted achievement quartile distributions, ELS 2002 Study Sample

		Q1		Q2		Q3		Q4	
		Min	Max	Min	Max	Min	Max	Min	Max
	HSGPA	0	1.93	1.94	2.61	2.62	3.3	3.31	4.59
Pooled Sample	Test Score	20.91	43.38	43.39	50.55	50.56	57.61	57.62	81.04
	HSGPA	0.27	1.93	1.94	2.61	2.62	3.3	3.31	4.59
Non-Profit	Test Score	20.91	43.38	43.4	50.55	50.56	57.61	57.62	81.04
	HSGPA	0.57	1.93	1.94	2.61	2.62	3.3	3.33	4.27
For-Profit	Test Score	26.32	43.29	43.4	50.54	50.6	57.6	57.73	70.7

Table 1.2. Multinomial Logistic Regression Models Predicting Likelihood of Citing Each Primary Reason for Enrollment in a For-Profit by GPA Quartile, ELS 2002 Study Sample

	Base Outcome: Cost vs.									
Predictor Variable	Program of Study		Reputation		Location		Personal Reasons		Another reason	
	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
					1st Quartile Model					
For Profit	15.20***	11.97	9.229*	8.462	1.369	1.173	2.048	2.028	1.951	1.806
Num. of cases	600									
					2nd Quartile Model					
For Profit	31.83***	27.08	13.32**	12.66	1.072	1.036	5.279+	4.939	6.742*	6.17
Num. of cases	1,300									
					3rd Quartile Model					
For Profit	16.59***	10.79	5.073*	4.023	0.194+	0.189	2.142	1.929	7.606**	5.549
Num. of cases	1,800									
					4th Quartile Model					
For Profit	8.762*	8.252	1.165	1.32	1.61	1.615	6.073	6.697	2.013	2.646
Num. of cases	2,300									

Note: Controls and intercept omitted from table.
*** p<0.001, ** p<0.01, * p<0.05, † p<0.10 (two-tailed tests)

Table 1.3. Penalized Likelihood Logistic Regression Models Predicting the Likelihood of Enrolling in a For-Profit College by Test Score Quartile, ELS 2002 Study Sample

	Q1		Q2		Q3		Q4	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
Main Reason:								
Cost/Affordability (ref)	-	-	-	-	-	-	-	-
Program of Study	8.697***	5.032	33.13***	27.69	10.98***	5.775	22.50***	18.95
Reputation of program	4.288*	3.152	13.75**	12.51	5.192**	3.176	2.631	2.723
Location	1.096	0.735	2.978	2.706	1.084	0.707	2.099	2.044
Personal/family reasons	3.834+	2.773	10.24*	9.410	2.736	9.410	8.961*	8.753
Another reason	4.257*	2.916	10.44**	9.430	6.632**	4.174	3.981	4.174
Race/Ethnicity:								
Non-Hispanic White (ref)	-	-	-	-	-	-	-	-
Non-Hispanic Black	0.422+	0.195	1.026	0.437	0.711	0.514	0.308	0.614
Latino/Hispanic	0.748	0.377	1.592	-0.731	0.950	0.518	1.611	1.151
Asian-American/Pacific Islander	0.161+	0.153	0.806	0.552	0.862	0.660	1.541	1.414
American Indian/Alaska native	0.195	0.335	5.330	5.431	1.236	1.845	5.823	11.62
Multiracial	1.061	0.851	1.276	0.783	0.933	0.815	0.358	0.523
Parent's Highest Education Level:								
No College (ref)	-	-	-	-	-	-	-	-
Bachelor's degree	0.783	0.338	1.202	0.515	0.785	0.376	4.009+	3.069
Advanced Degree	0.717	0.549	0.784	0.546	0.656	0.476	2.938	3.108
Female	0.628+	0.177	1.383	0.372	1.303	0.376	0.582	0.212
SES Composite	0.628	0.228	0.721	0.256	0.756	0.289	0.352*	0.174
# Academic Risk Factors:								

Table 1.3. Penalized Likelihood Logistic Regression Models Predicting the Likelihood of Enrolling in a For-Profit College by Test Score Quartile, ELS 2002 Study Sample

	Q1		Q2		Q3		Q4	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
None (ref)	-	-	-	-	-	-	-	-
One	1.596	0.615	1.424	0.437	0.907	0.299	1.128	0.442
Two	2.149+	0.893	0.815	0.377	1.003	0.452	1.563	0.936
Three	0.874	0.509	2.254+	1.071	2.794+	1.724	3.258	5.062
Four+	1.706	1.262	2.993	2.284	0.386	0.669	8.125	18.73
% Minority of H.S. (2003/4)	1.012*	0.00560	0.999	0.00516	0.995	0.00720	1.009	0.00860
Non-native English Speaker	0.824	0.380	0.467	0.265	0.634	0.537	0.559	0.535
Parent(s) Not Native Speakers	0.560	0.346	1.440	0.789	2.465	1.826	2.078	1.879
Generational immigrant status	1.207	0.405	1.111	0.362	0.658	0.335	0.789	0.447
% of 10th Graders in College Prep	1.000	0.00409	1.005	0.00438	1.000	0.00475	0.994	0.00566
Discussed College w/ Parents	0.628	0.409	4.858	7.079	0.135***	0.0772	0.191+	0.166
Children	3.098	3.103	1.763	1.677	2.416	3.788	4.521	8.124
Parent(s) attend PTO meetings	1.015	0.294	0.885	0.241	0.985	0.303	0.488	0.222
# months between HS and College	1.051+	0.0267	1.071*	0.0291	1.113***	0.0344	1.103+	0.0591
Extracurriculars	0.549*	0.153	0.735	0.210	0.240***	0.0680	0.381*	0.156
Test Score	0.930*	0.0309	0.949	0.0617	0.929	0.0647	0.914+	0.0491
Intercept	0.830	1.323	0.00641	0.0225	8.819	33.86	4.874	17.85
Number of cases	650		1,200		1,800		2,300	

*** p<0.001, ** p<0.01, * p<0.05, † p<0.10 (two-tailed tests)

Table 1.4. Penalized Likelihood Logistic Regression Models Predicting the Likelihood of Enrolling in a For-Profit College by GPA Quartile, ELS 2002 Study Sample

	Q1		Q2		Q3		Q4	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
Main Reason:								
Cost/Affordability (ref)	-	-	-	-	-	-	-	-
Program of Study	10.29***	6.903	32.20***	21.18	15.43***	9.028	6.285**	4.360
Reputation of program	7.516**	5.808	13.26***	9.930	4.377*	3.124	1.443	1.298
Location	1.659	1.218	1.913	1.469	0.460	0.388	1.728	1.379
Personal/family reasons	3.985+	3.300	7.443**	5.670	3.798+	2.829	2.753	2.460
Another reason	2.525	2.142	6.819**	5.079	7.965**	5.335	1.846	1.906
Race/Ethnicity:								
Non-Hispanic White (ref)	-	-	-	-	-	-	-	-
Non-Hispanic Black	1.005	0.473	0.682	0.313	0.711	0.428	0.254	0.384
Latino/Hispanic	0.859	0.431	1.382	0.622	1.463	0.830	2.054	1.673
Asian-American/Pacific Islander	1.234	0.962	0.465	0.382	1.600	1.180	0.954	0.846
American Indian/Alaska native	1.698	1.864	2.024	2.216	1.095	2.739	1.343	2.107
Multiracial	0.596	0.546	1.106	0.646	0.0953	0.155	1.002	1.018
Parent's Highest Education Level:								
No College (ref)	-	-	-	-	-	-	-	-
Bachelor's degree	0.703	0.358	1.111	0.43	1.795	0.922	1.737	1.335
Advanced Degree	0.338	0.298	0.934	0.575	1.069	0.878	1.986	2.076
Female	1.001	0.323	1.319	0.335	1.440	0.429	0.719	0.294
SES Composite	0.958	0.377	0.460*	0.151	0.518	0.214	0.796	0.426
# Academic Risk Factors:								

Table 1.4. Penalized Likelihood Logistic Regression Models Predicting the Likelihood of Enrolling in a For-Profit College by GPA Quartile, ELS 2002 Study Sample

	Q1		Q2		Q3		Q4	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
None (ref)	-	-	-	-	-	-	-	-
One	0.722	0.280	1.212	0.357	1.721+	0.559	1.244	0.566
Two	0.926	0.422	0.714	0.293	1.551	0.711	2.349	1.340
Three	1.389	0.754	1.057	0.561	3.317+	2.270	0.768	1.160
Four+	0.815	0.658	1.647	1.532	3.047	4.390	1.758	2.927
% Minority of H.S. (2003/4)	1.006	0.00579	1.003	0.00528	0.996	0.00685	1.018*	0.00866
Non-native English Speaker	1.143	0.637	0.346+	0.211	0.279+	0.205	0.840	0.697
Parent(s) Not Native Speakers	1.281	0.829	1.105	0.645	1.331	0.941	1.259	1.069
Generational immigrant status	1.060	0.401	1.005	0.346	1.214	0.401	0.965	0.518
% of 10th Graders in College Prep	0.998	0.00492	1.004	0.00423	0.997	0.00475	0.981**	0.00608
Discussed College w/ Parents	0.684	0.520	0.594	0.345	0.146**	0.103	0.280	0.434
Children	2.132	2.449	4.309+	3.544	1.856	3.408	17.04+	26.59
Parent(s) attend PTO meetings	0.650	0.220	0.797	0.206	1.282	0.406	0.406+	0.212
# months between HS and College	1.040	0.0268	1.074**	0.0282	1.171***	0.0443	1.000	0.0765
Extracurriculars	0.624	0.191	0.741	0.188	0.229***	0.0689	0.352*	0.174
HS GPA	1.005	0.580	0.415	0.257	0.185*	0.142	0.374	0.289
Intercept	0.0855	0.130	0.0698	0.119	6.915	16.72	3.220	10.96
Number of cases	500		1,200		1,800		2,300	

*** p<0.001, ** p<0.01, * p<0.05, † p<0.10 (two-tailed tests)

Table 2.1. Population weighted descriptive statistics on demographic characteristics, pre-college factors, environmental pull factors, and college experiences, 2004-2009 BPS Sample

	Pooled Sample (n ≃ 2,660)		*Non-Profit (n ≃ 2,540)*		*For-Profit (n ≃ 130)*	
	Pct./Mean	SE/SD	Pct./Mean	SE/SD	Mean/Pct.	SD/SE
Gender	57.95	0.95	57.66	0.98	63.77	4.28
Non-Hispanic White	67.41	0.9	68.26	0.92	50.39	4.45
Non-Hispanic Black	17.11	0.72	16.31	0.73	33.07	4.19
Hispanic	12.87	0.64	12.45	0.65	21.25	3.64
Asian/Asian-American	6.08	0.46	6.22	0.47	3.1	1.55
First Generation College	63.88	0.93	63.02	0.65	81.1	3.48
High School GPA						
Less than 2.0	3.94	0.37	3.7	0.37	8.66	2.5
2.0 to 2.4	13.77	0.66	13.83	0.68	12.59	2.95
2.5 to 2.9	15.8	0.71	16.08	0.72	10.23	2.7
3.0 to 3.4	30.03	0.88	30.39	0.91	22.83	3.73
3.5 to 4.0	36.44	0.93	35.98	0.95	45.66	4.43
Highest math course taken						
Algebra I or Below	16.21	0.71	16.04	0.72	19.68	3.54
Algebra II	33.74	0.91	33.89	0.93	30.7	4.1
Trigonometry/Algebra II	17.22	0.73	17.46	0.75	12.59	2.95
Pre-calculus	25.82	0.84	25.34	0.86	35.43	4.26
Calculus	6.98	0.49	7.25	0.51	1.57	1.1
Earned college credit during HS	16.29	0.71	16.67	0.74	8.66	2.5
Delayed enrollment into college	27.77	0.86	26.64	0.87	50.39	4.45
Highest degree expected						
Associate's degree	10.24	0.58	9.34	0.57	28.34	4.01

Table 2.1. Population weighted descriptive statistics on demographic characteristics, pre-college factors, environmental pull factors, and college experiences, 2004-2009 BPS Sample

	Pooled Sample (n ≃ 2,660)		*Non-Profit (n ≃ 2,540)*		*For-Profit (n ≃ 130)*	
	Pct./Mean	SE/SD	Pct./Mean	SE/SD	Mean/Pct.	SD/SE
Bachelor's degree	36.18	0.93	35.75	0.95	44.88	4.43
Master's degree	39.26	0.94	40.36	0.97	17.32	3.37
Doctoral/First-professional degree	14.3	0.67	14.54	0.7	9.44	2.6
Hours worked						
Did not work	21.95	0.8	21.67	0.81	27.55	3.98
Less than 20 hours/week	20.94	0.78	21.67	0.81	6.29	2.16
20 or more hours/week	57.09	0.95	56.64	0.98	66.14	4.21
Independent	20.45	0.78	19.03	0.77	48.81	4.45
Total Financial Aid						
Did not receive aid	32.62	0.9	33.78	0.93	9.44	2.6
Less than $2,500	22.48	0.8	23.29	0.83	6.29	2.16
Between $2,500 and $4,999	21.13	0.79	21.24	0.81	18.89	3.48
Between $5,000 and $9,999	14.78	0.68	14.07	0.69	29.13	4.04
$10,000 or more	8.97	0.55	7.6	0.52	36.22	4.28
Part-time enrollment	57.92	0.95	58.65	0.97	43.3	4.41
Planned to transfer to a 4-year college in 2003/4	65.2	0.92	67.4	0.93	21.25	3.64
Academic integration (Mean/SD)	65.43	43.85	65.74	43.78	59.25	44.96
Took remedial course	29.61	0.88	30.7	0.91	7.87	2.39
Distance education	12.5	0.64	12.77	0.66	7.08	2.28

Note: values may not sum to 100 due to rounding

Table 2.2. Penalized Likelihood Logistic Regression Models Predicting the Likelihood of Transfer to a Non-Profit, Four-Year College Among Two-Year College Students, 2004-2009 BPS Sample

	Model 1		*Model 2*		*Model 3*		*Model 4*	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
For-Profit	0.209***	0.0522	0.269***	0.0692	0.248***	0.0666	0.310***	0.0851
Demographic Characteristics								
Female	1.020	0.0912	1.006	0.0935	1.040	0.0987	1.045	0.102
Non-Hispanic White	1.212	0.204	1.276	0.224	1.265	0.225	1.248	0.227
Non-Hispanic Black	0.811	0.154	0.899	0.177	0.872	0.174	0.849	0.173
Hispanic	1.021	0.173	1.001	0.177	1.091	0.195	1.044	0.190
Asian/Asian-American	1.342	0.311	1.250	0.301	1.177	0.289	1.143	0.285
First Generation College	0.654***	0.0611	0.730**	0.0708	0.727**	0.0723	0.748**	0.0761
Pre-College Factors								
High School GPA:								
Less than 2.0 (ref)	-	-	-	-	-	-	-	-
2.0 to 2.4	-	-	1.079	0.284	1.044	0.277	1.011	0.273
2.5 to 2.9	-	-	1.472	0.385	1.430	0.378	1.429	0.383
3.0 to 3.4	-	-	1.499	0.376	1.491	0.378	1.471	0.379
3.5 to 4.0	-	-	1.445	0.364	1.441	0.369	1.390	0.361
Highest math course taken:								
Algebra I or Below (ref)	-	-	-	-	-	-	-	-
Algebra II	-	-	1.252+	0.170	1.233	0.170	1.197	0.169
Trigonometry/Algebra II	-	-	1.835***	0.290	1.711***	0.275	1.607**	0.264
Pre-calculus	-	-	1.569**	0.234	1.632**	0.254	1.550**	0.248
Calculus	-	-	3.138***	0.745	2.723***	0.653	2.609***	0.636

Table 2.2. Penalized Likelihood Logistic Regression Models Predicting the Likelihood of Transfer to a Non-Profit, Four-Year College Among Two-Year College Students, 2004-2009 BPS Sample

	Model 1		*Model 2*		*Model 3*		*Model 4*	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
Earned college credit during HS	-	-	1.049	0.135	1.036	0.135	1.018	0.136
Delayed enrollment into college	-	-	0.628***	0.0694	0.764*	0.0976	0.791+	0.104
Highest degree expected:								
Associate's degree (ref)	-	-	-	-	-	-	-	-
Bachelor's degree	-	-	2.293***	0.384	2.205***	0.377	1.531*	0.272
Master's degree	-	-	3.462***	0.583	3.343***	0.575	2.141***	0.388
Doctoral/First-professional degree	-	-	3.659***	0.716	3.497***	0.697	2.194***	0.457
Environmental Pull Factors								
Hours worked:								
Did not work (ref)	-	-	-	-	-	-	-	-
Less than 20 hours/week	-	-	-	-	1.320+	0.192	1.323+	0.197
20 or more hours/week	-	-	-	-	0.858	0.101	0.847	0.102
Independent	-	-	-	-	0.801	0.127	0.930	0.152
Total Financial Aid:								
Did not receive aid (ref)	-	-	-	-	-	-	-	-
Less than $2,500	-	-	-	-	0.796+	0.0990	0.821	0.104
Between $2,500 and $4,999	-	-	-	-	1.020	0.136	1.018	0.138
Between $5,000 and $9,999	-	-	-	-	0.941	0.144	0.940	0.148
$10,000 or more	-	-	-	-	0.931	0.174	1.013	0.196
Part-time enrollment	-	-	-	-	0.542***	0.0543	0.559***	0.0570

Table 2.2. Penalized Likelihood Logistic Regression Models Predicting the Likelihood of Transfer to a Non-Profit, Four-Year College Among Two-Year College Students, 2004-2009 BPS Sample

	Model 1		*Model 2*		*Model 3*		*Model 4*	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
College Experiences								
Planned to transfer to 4-year in 2003/4	-	-	-	-	-	-	2.392***	0.250
Academic integration	-	-	-	-	-	-	1.004***	0.00114
Took remedial course	-	-	-	-	-	-	0.891	0.0936
Distance education	-	-	-	-	-	-	0.938	0.132
Intercept	2.048**	0.457	0.388**	0.142	0.778	0.324	0.432+	0.187
Pseudo R^2 (McFadden)	0.03		0.083		0.107		0.138	
Log-Likelihood	-1463.45		-1358.79		-1309.023		-1251.617	
BIC	2988.888		2903.544		2881.493		2797.675	
AIC	2942.901		2765.581		2686.046		2579.234	
Number of cases	2320		2320		2320		2320	

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

Table 2.3. Penalized Likelihood Logistic Regression Models Predicting the Likelihood of Transfer to A*ny* Four-Year College Among Two-Year College Students, 2004-2009 BPS Sample

	Model 1		*Model 2*		*Model 3*		*Model 4*	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
For-Profit	0.295***	0.0587	0.390***	0.0802	0.367***	0.0789	0.439***	0.0960
Demographic Characteristics								
Female	0.983	0.0812	0.980	0.0836	1.006	0.0871	1.020	0.0903
Non-Hispanic White	1.135	0.175	1.173	0.186	1.161	0.186	1.125	0.184
Non-Hispanic Black	0.770	0.132	0.837	0.148	0.812	0.145	0.791	0.143
Hispanic	0.931	0.143	0.926	0.147	0.984	0.158	0.942	0.153
Asian/Asian-American	1.192	0.255	1.080	0.239	1.004	0.225	0.971	0.221
First Generation College	0.669***	0.0579	0.736***	0.0658	0.738***	0.0674	0.759**	0.0706
Pre-College Factors								
High School GPA:								
Less than 2.0 (ref)	-	-	-	-	-	-	-	-
2.0 to 2.4	-	-	1.001	0.234	0.991	0.232	0.985	0.234
2.5 to 2.9	-	-	1.306	0.303	1.278	0.298	1.296	0.305
3.0 to 3.4	-	-	1.348	0.299	1.356	0.302	1.366	0.308
3.5 to 4.0	-	-	1.317	0.293	1.313	0.295	1.285	0.292
Highest math course taken:								
Algebra I or Below (ref)	-	-	-	-	-	-	-	-
Algebra II	-	-	1.193	0.145	1.189	0.147	1.138	0.143
Trigonometry/Algebra II	-	-	1.793***	0.259	1.729***	0.253	1.567**	0.234
Pre-calculus	-	-	1.471**	0.198	1.517**	0.211	1.414*	0.201
Calculus	-	-	3.167***	0.704	2.909***	0.652	2.716***	0.616

Table 2.3. Penalized Likelihood Logistic Regression Models Predicting the Likelihood of Transfer to A*ny* Four-Year College Among Two-Year College Students, 2004-2009 BPS Sample

	Model 1		*Model 2*		*Model 3*		*Model 4*	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
Earned college credit during HS	-	-	1.108	0.133	1.096	0.133	1.061	0.131
Delayed enrollment into college	-	-	0.743**	0.0740	0.867	0.0991	0.901	0.106
Highest degree expected:								
Associate's degree (ref)	-	-	-	-	-	-	-	-
Bachelor's degree	-	-	1.970***	0.286	1.890***	0.278	1.352*	0.208
Master's degree	-	-	2.831***	0.415	2.728***	0.406	1.803***	0.284
Doctoral/First-professional degree	-	-	3.032***	0.526	2.911***	0.511	1.892***	0.348
Environmental Pull Factors								
Hours worked:								
Did not work (ref)	-	-	-	-	-	-	-	-
Less than 20 hours/week	-	-	-	-	1.239	0.165	1.248	0.169
20 or more hours/week	-	-	-	-	0.827+	0.0880	0.828+	0.0898
Independent	-	-	-	-	0.867	0.120	0.963	0.137
Total Financial Aid:								
Did not receive aid (ref)	-	-	-	-	-	-	-	-
Less than $2,500	-	-	-	-	0.783*	0.0900	0.806+	0.0943
Between $2,500 and $4,999	-	-	-	-	0.924	0.112	0.928	0.115
Between $5,000 and $9,999	-	-	-	-	0.851	0.118	0.857	0.121
$10,000 or more	-	-	-	-	0.923	0.156	0.993	0.172
Part-time enrollment	-	-	-	-	0.622***	0.0563	0.635***	0.0584
College Experiences								

Table 2.3. Penalized Likelihood Logistic Regression Models Predicting the Likelihood of Transfer to A*ny* Four-Year College Among Two-Year College Students, 2004-2009 BPS Sample

	Model 1		*Model 2*		*Model 3*		*Model 4*	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
Planned to transfer to 4-year in 2003/4	-	-	-	-	-	-	2.180***	0.208
Academic integration	-	-	-	-	-	-	1.004***	0.0010 3
Took remedial course	-	-	-	-	-	-	0.823*	0.0783
Distance education	-	-	-	-	-	-	1.079	0.142
Intercept	2.127***	0.437	0.527*	0.171	0.956	0.354	0.611	0.234
Pseudo R^2 (McFadden)	0.022		0.055		0.065		0.088	
Log-Likelihood	-1717.338		-1615.875		-1572.29		-1515.619	
BIC	3497.776		3421.052		3412.757		3330.966	
AIC	3450.675		3279.75		3212.579		3107.238	
Number of Cases	2,660		2,660		2,660		2,660	

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

Table 2.4. Penalized Likelihood Logistic Regression Models Predicting the Likelihood of Transfer to Any Four-Year College Among Two-Year College Students Who Started College Planning to Transfer, 2004-2009 BPS Sample

	Model 1		*Model 2*		*Model 3*		*Model 4*	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
For-Profit	0.361***	0.0838	0.482**	0.114	0.364***	0.0902	0.342***	0.0849
Demographic Characteristics								
Female	1.013	0.0745	1.001	0.0773	1.027	0.0812	1.040	0.0829
Non-Hispanic White	1.154	0.153	1.201	0.166	1.197	0.168	1.194	0.168
Non-Hispanic Black	0.759+	0.116	0.810	0.128	0.802	0.128	0.802	0.128
Hispanic	0.751*	0.0983	0.733*	0.0999	0.782+	0.108	0.796+	0.110
Asian/Asian-American	1.454*	0.269	1.322	0.258	1.233	0.245	1.221	0.244
First Generation College	0.619***	0.0472	0.693***	0.0553	0.683***	0.0560	0.700***	0.0577
Pre-College Factors								
High School GPA:								
Less than 2.0 (ref)	-	-	-	-	-	-	-	-
2.0 to 2.4	-	-	0.905	0.196	0.945	0.206	0.982	0.215
2.5 to 2.9	-	-	1.099	0.234	1.143	0.246	1.170	0.253
3.0 to 3.4	-	-	1.222	0.251	1.273	0.263	1.296	0.269
3.5 to 4.0	-	-	1.052	0.218	1.167	0.245	1.173	0.247
Highest math course taken:								
Algebra I or Below (ref)	-	-	-	-	-	-	-	-
Algebra II	-	-	1.613***	0.184	1.661***	0.191	1.646***	0.190
Trigonometry/Algebra II	-	-	2.173***	0.282	2.171***	0.286	2.064***	0.273
Pre-calculus	-	-	1.771***	0.220	2.011***	0.260	1.917***	0.250
Calculus	-	-	5.075***	0.985	4.626***	0.912	4.374***	0.868

Table 2.4. Penalized Likelihood Logistic Regression Models Predicting the Likelihood of Transfer to Any Four-Year College Among Two-Year College Students Who Started College Planning to Transfer, 2004-2009 BPS Sample

	Model 1		*Model 2*		*Model 3*		*Model 4*	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
Earned college credit during HS	-	-	1.200+	0.127	1.136	0.122	1.083	0.117
Delayed enrollment into college	-	-	0.528***	0.0489	0.698***	0.0741	0.680***	0.0725
Highest degree expected:								
Associate's degree (ref)	-	-	-	-	-	-	-	-
Bachelor's degree	-	-	1.820**	0.418	1.763*	0.410	1.775*	0.414
Master's degree	-	-	3.157***	0.722	3.027***	0.700	3.011***	0.699
Doctoral/First-professional degree	-	-	3.327***	0.805	3.164***	0.774	3.118***	0.766
Environmental Pull Factors								
Hours worked:								
Did not work (ref)	-	-	-	-	-	-	-	-
Less than 20 hours/week	-	-	-	-	1.406**	0.169	1.401**	0.170
20 or more hours/week	-	-	-	-	0.826*	0.0800	0.826*	0.0805
Independent	-	-	-	-	0.571***	0.0770	0.575***	0.0775
Total Financial Aid:								
Did not receive aid (ref)	-	-	-	-	-	-	-	-
Less than $2,500	-	-	-	-	1.058	0.110	1.045	0.109
Between $2,500 and $4,999	-	-	-	-	1.001	0.108	0.984	0.107
Between $5,000 and $9,999	-	-	-	-	1.342*	0.171	1.284+	0.165
$10,000 or more	-	-	-	-	1.675**	0.304	1.545*	0.283
Part-time enrollment	-	-	-	-	0.656***	0.0536	0.671***	0.0551
College Experiences								

Table 2.4. Penalized Likelihood Logistic Regression Models Predicting the Likelihood of Transfer to Any Four-Year College Among Two-Year College Students Who Started College Planning to Transfer, 2004-2009 BPS Sample

	Model 1		*Model 2*		*Model 3*		*Model 4*	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
Academic integration	-	-	-	-	-	-	1.003***	0.000938
Took remedial course	-	-	-	-	-	-	0.728***	0.0619
Distance education	-	-	-	-	-	-	1.216+	0.144
Intercept	0.851	0.151	0.201***	0.0704	0.416*	0.159	0.364**	0.142
Pseudo R^2 (McFadden)	0.022		0.076		0.095		0.1	
Log-Likelihood	-2146.549		-1986.044		-1916.706		-1892	
BIC	4357.986		4166.752		4109.186		4084.108	
AIC	4309.098		4020.088		3901.412		3858	
Number of cases	3,330		3,330		3,330		3,330	

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

Table 3.1: Population weighted summary statistics of dependent and independent variables, Wave 1, B&B 2008-12 Study Sample

	Pct./Mean	SE/SD
For-Profit	4.286	0.381
Annual Income ($) (M/SD)	36205.560	20476.690
Debt-to-income Ratio† {M/SD)	9.806	13.160
# jobs held now:		
Not working and/or enrolled	16.210	0.609
1 Part-time	7.770	0.466
1 Full-time	63.260	0.824
Multiple	12.770	0.549
Age (M/SD)	26.819	6.823
Parents' Income ($) (M/SD)	74560.290	63925.160
Female	57.680	0.875
Race:		
Non-Hispanic White	81.550	0.691
Non-Hispanic Black	8.420	0.501
Asian/Asian-American	4.650	0.394
American Indian/Alaska Native	0.950	0.183
Multiracial	2.600	0.260
Other race	1.810	0.210
Hispanic/Latino (any race)	8.450	0.499
Parents' Own Home	71.360	0.787
Mother has 4 yrs. college	39.340	0.866
Married	31.520	0.810
Children	13.180	0.594
Age at college entry (M/SD)	18.655	2.790
Age at graduation (M/SD)	25.343	6.786
Deviation from entry to grad. (M/SD)	70.323	145.426
SAT Score (1600 scale) (M/SD)	1084.485	178.085
HS GPA (M/SD)	3.307	0.703
College GPA (M/SD)	3.262	0.481
Selectivity:		
Open admission	8.570	0.652
Minimally selective	9.810	0.526
Moderately selective	54.580	0.876
Very selective	27.040	0.786
Transferred	54.370	0.874

Table 3.1: Population weighted summary statistics of dependent and independent variables, Wave 1, B&B 2008-12 Study Sample

	Pct./Mean	SE/SD
First Generation, Low Income	12.890	0.563
# of transfers (M/SD)	0.812	0.942
% of time unemployed since BA (M/SD)	5.767	10.931
# hours worked/week (M/SD)	39.487	11.101
# jobs held since BA (M/SD)	1.758	0.990
Military service	3.560	0.330
Lived in MSA	69.060	0.797
Lived in the Northeast	22.030	0.721
Lived in the Midwest	25.800	0.745
Lived in the West	26.910	0.780
Lived in the South	24.530	0.768

Note: Values may not sum to 100 due to rounding; Values displayed are percentage/proportion estimates and standard errors unless marked Mean/SD.

* Summary statistics for college field of study and occupation found in Appendices 3.A and 3.B.

†Borrowers not in repayment in 2009 were excluded from sample.

Table 3.2 Population weighted summary statistics for annual income ($) by race/ethnicity, B&B 2008-2012 Study Sample

	Non-Profit		For-Profit	
	Mean (SD)	Median	Mean (SD)	Median
Non-Hispanic White	35,445.21 (20,232.82)	32,000	51,190.8 (26,310.91)	41,132
Non-Hispanic Black	35,017.2 (18,596.44)	32,000	47,136.57 (17,559.15)	37,939.20
Latino/Hispanic	32,196.45 (16179.09)	32880	49,205.5 (23,509.63)	35,859.20
Asian-American/Pacific Islander	42,391.58 (19,123.48)	37,220	59,453.73 (33,658.95)	45,000

Note: Standard deviations in parentheses; medians are sample statistics

Table 3.3. Results of the effect of an individual's demographic, household, college & employment characteristics on their logged annual wages in 2009 (transfers included), B&B 2008-12 Study Sample

	Model 1.1		*Model 1.2*		*Model 1.3*		*Model 1.4*		*Model 1.5*	
Predictor Var.	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
For-Profit	1.216+	0.127	1.081	0.101	1.034	0.0990	1.023	0.0965	1.134+	0.0794
Demo. Char.										
Age	-	-	1.046***	0.0086	1.096***	0.0239	1.095***	0.0237	1.084***	0.0191
Par. income ($)	-	-	1.000***	0.000	1.000***	0.000	1.000***	0.000	1.000***	0.000
Female	-	-	0.832***	0.0207	0.878***	0.0232	0.883***	0.0233	0.942**	0.0194
Race:										
NH White (ref)	-	-	-	-	-	-	-	-	-	-
NH Black	-	-	0.921	0.0537	0.909	0.0541	0.911	0.0543	0.943	0.0444
Asian/As-Am	-	-	1.328***	0.0625	1.225***	0.0512	1.202***	0.0509	1.103**	0.0390
Amer. Indian	-	-	0.837+	0.0892	0.835+	0.0888	0.826+	0.0894	0.995	0.0709
Multiracial	-	-	1.091	0.0904	1.097	0.0828	1.084	0.0828	1.121+	0.0708
Other race	-	-	0.998	0.0873	1.027	0.0851	1.004	0.0825	1.033	0.0689
Latino (any race)	-	-	0.999	0.0484	1.033	0.0460	1.026	0.0453	1.017	0.0348
Par. Own Home	-	-	0.989	0.0287	0.954	0.0295	0.956	0.0293	0.954+	0.0239
Mother has BA	-	-	0.972	0.0247	0.957	0.0281	0.958	0.0281	0.981	0.0231
Married	-	-	1.079**	0.0279	1.050*	0.0253	1.050*	0.0252	1.018	0.0204
Children	-	-	0.964	0.0603	0.965	0.0578	0.968	0.0573	0.973	0.0429
Col. & Cog. Var.										
Age at entry	-	-	-	-	0.957	0.0370	0.959	0.0371	0.935*	0.0279
Age at grad.	-	-	-	-	0.983	0.0357	0.985	0.0359	1.006	0.0280
Dev. entry/grad.	-	-	-	-	0.999	0.0015 5	0.999	0.00155	0.998+	0.0012 0

Table 3.3. Results of the effect of an individual's demographic, household, college & employment characteristics on their logged annual wages in 2009 (transfers included), B&B 2008-12 Study Sample

	Model 1.1		*Model 1.2*		*Model 1.3*		*Model 1.4*		*Model 1.5*	
Predictor Var.	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
SAT Score	-	-	-	-	1.000	7.98e-05	1.000	7.98e-05	1.000+	6.52e-05
HS GPA:										
0.5-0.9 (ref)	-	-	-	-	-	-	-	-	-	-
1.0-1.4	-	-	-	-	2.102**	0.536	2.055**	0.513	0.978	0.200
1.5-1.9	-	-	-	-	1.596*	0.339	1.596*	0.331	0.901	0.0939
2.0-2.4	-	-	-	-	1.408*	0.222	1.438*	0.227	0.865*	0.0623
2.5-2.9	-	-	-	-	1.382*	0.216	1.396*	0.218	0.837*	0.0583
3.0-3.4	-	-	-	-	1.400*	0.212	1.414*	0.214	0.859*	0.0549
3.5-4.0	-	-	-	-	1.400*	0.210	1.417*	0.213	0.851*	0.0533
Col. GPA	-	-	-	-	1.042	0.0269	1.045+	0.0270	1.038+	0.0215
Transferred	-	-	-	-	0.977	0.0407	0.979	0.0405	0.968	0.0337
# of transfers	-	-	-	-	1.021	0.0261	1.016	0.0257	1.028	0.0218
Employ. Char.										
% time unem.	-	-	-	-	-	-	-	-	0.998**	0.000751
Hrs wrk/wk	-	-	-	-	-	-	-	-	1.024***	0.00165
# jbs since BA	-	-	-	-	-	-	-	-	0.959***	0.0101
# jbs now:										
1 PT (ref)	-	-	-	-	-	-	-	-	-	-
1 FT	-	-	-	-	-	-	-	-	1.292***	0.0603
Mul.	-	-	-	-	-	-	-	-	1.105+	0.0892

Table 3.3. Results of the effect of an individual's demographic, household, college & employment characteristics on their logged annual wages in 2009 (transfers included), B&B 2008-12 Study Sample

	Model 1.1		*Model 1.2*		*Model 1.3*		*Model 1.4*		*Model 1.5*	
Predictor Var.	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
Military ser.	-	-	-	-	-	-	-	-	1.099	0.140
Other controls										
Col. Select.	No		No		Yes		Yes		Yes	
FGLI	No		No		Yes		Yes		Yes	
Col. major	No		No		Yes		Yes		Yes	
Region	No		No		No		Yes		Yes	
Occupation	No		No		No		No		Yes	
Intercept	30574***	386.8	10297***	2,170	5806***	2,236	3226***	1,555	2731***	1,154
Adjusted R^2	0.0018		0.0701		0.1795		0.1855		0.4846	
Number of cases	5300		5,300		5,300		5,300		5,300	

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10 (two-tailed tests)

Note: Variable names abbreviated; reference Table 3.1 for full names

Table 3.4. Results of the effect of an individual's demographic, household, college & employment characteristics on their logged annual wages in 2009 (transfers excluded), B&B 2008-12 Study Sample

	Model 2.1		*Model 2.2*		*Model 2.3*		*Model 2.4*		*Model 2.5*	
Predictor Var.	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
For-Profit	0.994	0.235	0.899	0.175	0.815	0.151	0.796	0.141	0.978	0.0937
Demo. Char.										
Age	-	-	1.054***	0.0141	1.085**	0.0342	1.080*	0.0339	1.075**	0.0267
Par. income ($)	-	-	1.000***	0.000	1.000***	0.000	1.000***	0.000	1.000***	0.000
Female	-	-	0.790***	0.0275	0.864***	0.0331	0.877***	0.0335	0.945+	0.0280
Race:										
NH White (ref)	-	-	-	-	-	-	-	-	-	-
NH Black	-	-	0.859+	0.0772	0.862	0.0819	0.866	0.0830	0.953	0.0620
Asian/As-Am	-	-	1.381***	0.0657	1.270***	0.0491	1.245***	0.0507	1.088*	0.0453
Amer. Indian	-	-	0.843	0.137	0.916	0.133	0.908	0.126	0.997	0.111
Multiracial	-	-	1.100	0.145	1.064	0.129	1.043	0.126	1.097	0.102
Other race	-	-	1.175	0.130	1.143	0.119	1.115	0.111	1.067	0.0821
Latino (any race)	-	-	0.949	0.0723	1.004	0.0704	1.016	0.0673	1.048	0.0555
Par. Own Home	-	-	0.995	0.0429	0.959	0.0443	0.963	0.0440	0.911*	0.0346
Mother has BA	-	-	0.956	0.0330	0.942	0.0379	0.940	0.0381	0.982	0.0299
Married	-	-	1.073+	0.0405	1.058	0.0376	1.056	0.0373	1.022	0.0306
Children	-	-	0.920	0.110	0.924	0.111	0.929	0.110	0.869+	0.0644
Col. & Cog. Var.										
Age at entry	-	-	-	-	1.001	0.0516	1.002	0.0515	0.937+	0.0360
Age at grad.	-	-	-	-	0.983	0.0451	0.988	0.0451	1.040	0.0357
Dev. entry/grad.	-	-	-	-	0.999	0.00221	0.999	0.00219	0.997+	0.00159

Table 3.4. Results of the effect of an individual's demographic, household, college & employment characteristics on their logged annual wages in 2009 (transfers excluded), B&B 2008-12 Study Sample

	Model 2.1		*Model 2.2*		*Model 2.3*		*Model 2.4*		*Model 2.5*	
Predictor Var.	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
SAT Score	-	-	-	-	1.000	0.000118	1.000	0.000117	1.000	9.23e-05
HS GPA:										
0.5-0.9 (ref)	-	-								
1.0-1.4	-	-	-	-	-	-	-	-	-	-
1.5-1.9	-	-	-	-	1.086	0.304	1.112	0.298	1.063	0.170
2.0-2.4	-	-	-	-	1.094	0.108	1.130	0.111	1.041	0.118
2.5-2.9	-	-	-	-	1.042	0.0960	1.051	0.0965	0.987	0.112
3.0-3.4	-	-	-	-	1.005	0.0840	1.020	0.0822	1.012	0.106
3.5-4.0	-	-	-	-	1.061	0.0786	1.070	0.0784	1.027	0.106
Col. GPA	-	-	-	-	1.003	0.0395	1.005	0.0403	1.009	0.0299
Employ. Char.										
% time unem.	-	-	-	-	-	-	-	-	0.997***	0.0009
Hrs wrk/wk	-	-	-	-	-	-	-	-	1.023***	0.0021
# jbs since BA	-	-	-	-	-	-	-	-	0.948***	0.0136
# jbs now:	-	-	-	-	-	-	-	-		
1 PT (ref)	-	-	-	-	-	-	-	-	-	-
1 FT	-	-	-	-	-	-	-	-	1.321***	0.088
Mul.	-	-	-	-	-	-	-	-	1.101	0.0893
Military ser.	-	-	-	-	-	-	-	-	1.218+	0.143
Other controls										
Col. Select.	No		No		Yes		Yes		Yes	

Table 3.4. Results of the effect of an individual's demographic, household, college & employment characteristics on their logged annual wages in 2009 (transfers excluded), B&B 2008-12 Study Sample

	Model 2.1		*Model 2.2*		*Model 2.3*		*Model 2.4*		*Model 2.5*	
Predictor Var.	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
FGLI	No		No		Yes		Yes		Yes	
Col. major	No		No		Yes		Yes		Yes	
Region	No		No		No		Yes		Yes	
Occupation	No		No		No		No		Yes	
Intercept	30,409***	548.9	9,035***	3,022	5,675***	2,658	2,074***	1,237	1,249***	575.3
Adjusted R^2	0.0004		0.0929		0.1884		0.1974		0.5216	
Number of cases	2600		2,600		2,600		2,600		2,600	

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10 (two-tailed tests)

Note: Variable names abbreviated; reference Table 3.1 for full names

Table 3.5. Ethno-racial differences in the effect of an individual's demographic, household, college & employment characteristics on their logged annual wages in 2009 (transfers excluded), B&B 2008-12 Study Sample

	Whites		*Blacks*		*Latinos*		*Asians*	
Predictor Var.	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
For-Profit	1.065	0.108	0.619*	0.144	0.974	0.179	0.428***	0.100
Demo. Char.								
Age	1.066*	0.0303	1.004	0.0668	0.992	0.0540	0.888*	0.0508
Par. income ($)	1.000***	0.000	1.000	0.000	1.000**	0.00011	1.000+	0.0001
Female	0.950	0.0380	1.176*	0.0944	1.182*	0.0851	0.882+	0.0599
Par. Own Home	0.844***	0.0431	1.113	0.119	0.936	0.0681	1.002	0.0866
Mother has BA	1.020	0.0487	1.183	0.243	1.167	0.135	1.055	0.131
Married	1.025	0.0323	1.024	0.106	1.031	0.0680	0.801*	0.0852
Children	0.854	0.0868	1.079	0.111	0.998	0.111	0.768	0.172
Col. & Cog. Var.								
Age at entry	0.899**	0.0347	0.850	0.158	1.065	0.0721	0.919	0.0831
Age at grad.	1.060	0.0413	1.188	0.230	0.945	0.0781	1.118	0.124
Dev. entry/grad.	0.996*	0.00164	0.994	0.00753	1.003	0.00291	1.004	0.00380
SAT Score	1.000	0.00011	1.001*	0.00035	1.000	0.00023	1.000	0.0002
HS GPA:	1.007	0.0204	1.020	0.0388	1.010	0.0364	0.973	0.0564
Col. GPA	0.996	0.0304	0.976	0.106	1.082	0.0904	1.319***	0.107
Employ. Char.								
% time unem.	0.997*	0.00136	1.001	0.00247	0.996	0.00256	0.990**	0.00348
Hrs wrk/wk	1.026***	0.00293	1.027***	0.00676	1.027***	0.00484	0.993	0.00698
# jbs since BA								
# jbs now:								
1 PT (ref)	0.943***	0.0154	0.960	0.0438	0.995	0.0303	0.980	0.0450

Table 3.5. Ethno-racial differences in the effect of an individual's demographic, household, college & employment characteristics on their logged annual wages in 2009 (transfers excluded), B&B 2008-12 Study Sample

	Whites		*Blacks*		*Latinos*		*Asians*	
Predictor Var.	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
1 FT	1.259**	0.106	2.033***	0.391	1.371**	0.153	2.441***	0.455
Mul.	1.071	0.109	1.645*	0.353	0.989	0.145	2.381***	0.507
Military ser.	1.286**	0.115	1.262	0.318	1.457	0.488	0.492***	0.103
Other controls								
Col. Select.	Yes		Yes		Yes		Yes	
FGLI	Yes		Yes		Yes		Yes	
Col. major	Yes		Yes		Yes		Yes	
Region	Yes		Yes		Yes		Yes	
Occupation	Yes		Yes		Yes		Yes	
Intercept	3,672***	1,103	1,030***	1,253	2,301***	1,444	2,213***	2330
Adjusted R^2	0.4705		0.4611		0.5766		0.5742	
Number of cases	2,200		190		210		130	

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10 (two-tailed tests)

Note: Variable names abbreviated; reference Table 3.1 for full names

Table 3.6: Results of the effect of an individual's demographic, household, college & employment characteristics on their debt to income ratio in 2009 (transfers excluded), B&B 2008-12 Study Sample

	Model 3.1		Model 3.2		Model 3.3		Model 3.4		Model 3.5	
Predictor Variable	β	SE	β	SE	β	SE	β	SE	β	SE
For-Profit	3.519	3.33	5.340+	2.854	3.431	2.839	3.829	2.842	4.657+	2.668
Additional Controls										
Demographic Characteristics	No		Yes		Yes		Yes		Yes	
College & Cognitive Measures	No		No		Yes		Yes		Yes	
Employment characteristics	No		No		No		No		Yes	
College selectivity	No		No		Yes		Yes		Yes	
First Generation/Low-Income	No		No		Yes		Yes		Yes	
College major	No		No		Yes		Yes		Yes	
Regional controls	No		No		No		Yes		Yes	
Occupational controls	No		No		No		No		Yes	
Intercept	8.088***	0.38	27.38***	6.277	31.06**	10.61	29.79**	10.98	99.87***	17.91
Number of cases	1,100		1,100		1,100		1,100		1,100	
Adjusted R^2	0.003		0.0499		0.2392		0.2467		0.3572	

Note: output has been truncated

*** p<0.001, ** p<0.01, * p<0.05, † p<0.10 (two-tailed tests)

Table 3.7: Results of the effect of an individual's demographic, household, college & employment characteristics on their likelihood of switching jobs by 2009 (includes only those with one FT job), B&B 2008-12 Study Sample

	Model 4.1		Model 4.2		Model 4.3		Model 4.4		Model 4.5	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
For-Profit	1.174	0.454	1.138	0.46	4.032*	2.616	4.157*	2.719	4.896*	3.099
Additional Controls										
Demographic Characteristics	No		Yes		Yes		Yes		Yes	
College & Cognitive Measures	No		No		Yes		Yes		Yes	
Employment characteristics	No		No		No		No		Yes	
HSGPA	No		No		Yes		Yes		Yes	
College selectivity	No		No		Yes		Yes		Yes	
First Generation/Low-Income	No		No		Yes		Yes		Yes	
College major	No		No		Yes		Yes		Yes	
Regional controls	No		No		No		Yes		Yes	
Occupational controls	No		No		No		No		Yes	
Intercept	0.774***	0.0472	0.160+	0.153	.00539**	0.0103	0.00327**	0.00726	0.0162	0.0439
Number of cases	3,000		3,000		3,000		3,000		3,000	
Archer-Lemeshow test (Prob > F)	0.9999		0.7771		0.8247		0.7629		0.5578	

Note: output has been truncated

*** p<0.001, ** p<0.01, * p<0.05, † p<0.10 (two-tailed tests)

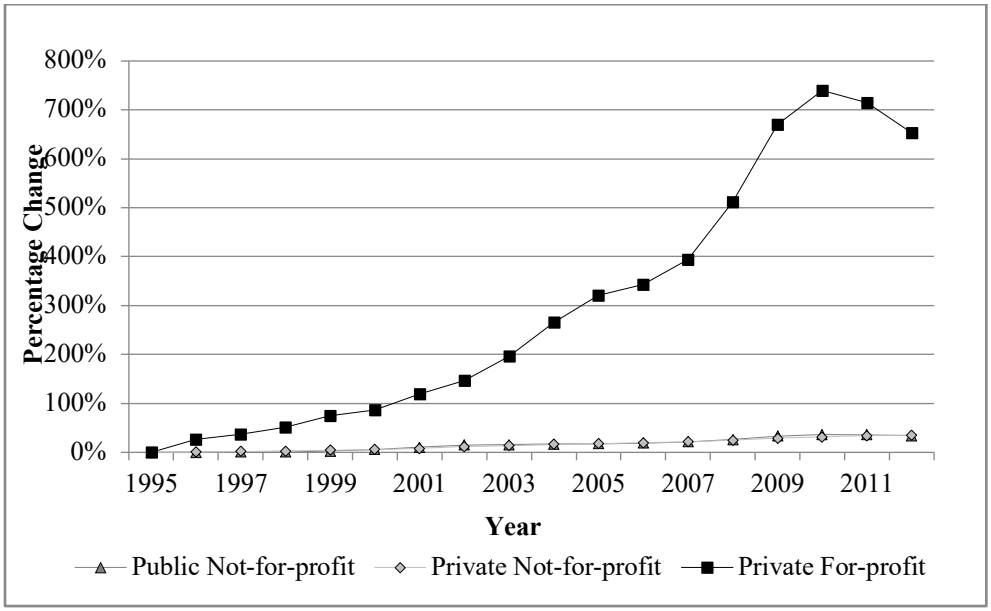
Table 3.8. Results of the effect of an individual's demographic, household, college & employment characteristics on their likelihood of holding different types of employment in 2009 (Model 5), B&B 2008-12 Study Sample

	Base outcome: One Full-time (FT) job vs.					
	Not working and/or enrolled		One PT job		Multiple jobs	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE
For-Profit	0.913	0.717	2.722*	0.361	1.705	0.329
Additional Controls (Y/N)						
Demographic Characteristics			Yes			
College & Cognitive Measures			Yes			
Employment characteristics			Yes			
HSGPA			Yes			
College selectivity			Yes			
First Generation/Low-Income			Yes			
College major			Yes			
Regional controls			Yes			
Occupational controls			Yes			
Intercept	2.568***	0.642	3.325***	0.138	5.564*	0.167
Number of cases			3,000			

Note: output has been truncated.

*** p<0.001, ** p<0.01, * p<0.05, † p<0.10 (two-tailed tests)

Figure 0.1. Percentage Change in Title IV Enrollment by College Type, 1995-2012



SOURCE: Author's rendering of Integrated Postsecondary Education Data System (IPEDS) data, National Center for Education Statistics, U.S. Department of Education, 2013

Figure 2.1. Predicted Probability of Transfer to a Four-Year, Non-Profit College by Two-Year College Type (Model 4), BPS 2004-2009

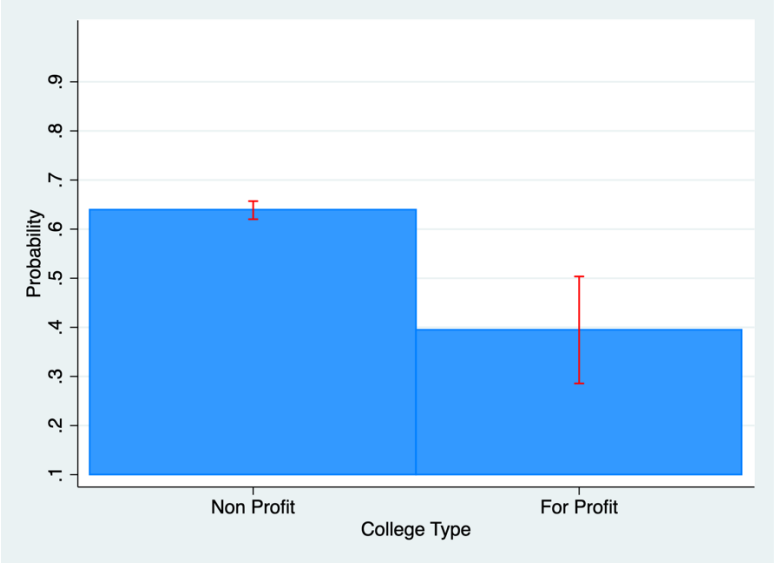


Figure 2.2. Predicted Probability of Transfer to *Any* Four-Year College by Two-Year College Type (Model 4), BPS 2004-2009

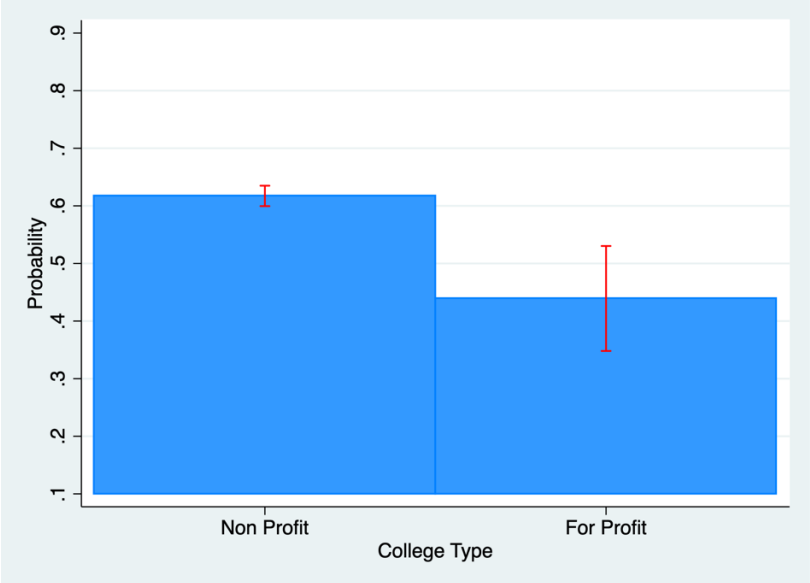


Figure 2.3. Predicted Probability of Transfer to Any Four-Year College Among Students Who Planned to Transfer When They Began College (Model 4), BPS 2004-2009

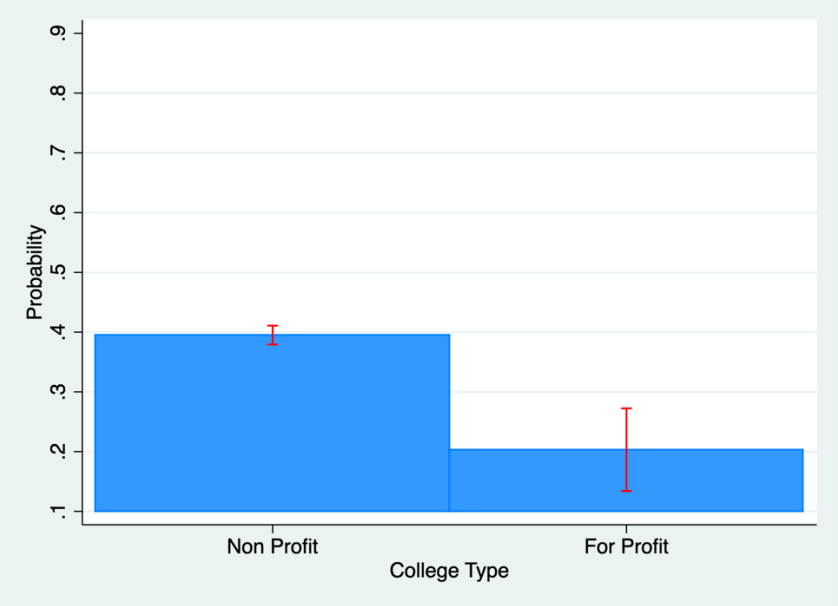
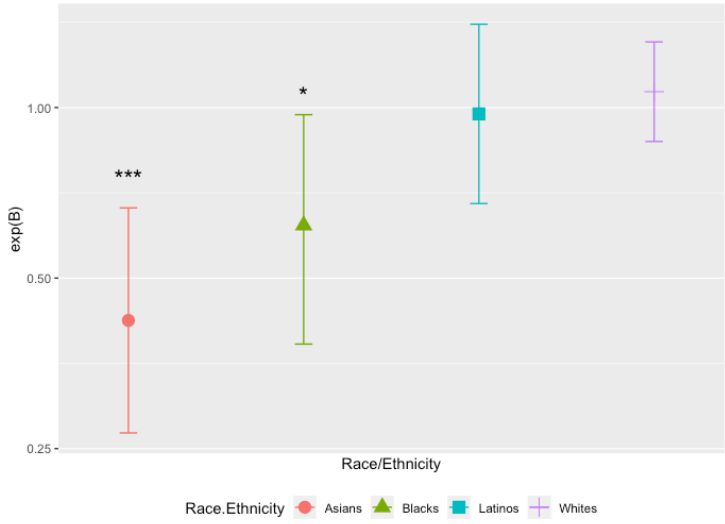
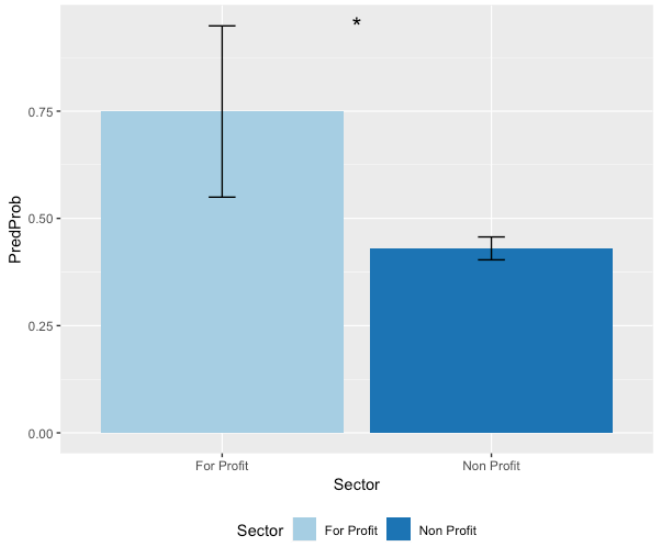


Figure 3.1. Exponentiated Coefficients Highlighting Ethno-Racial Differences in Predicted Income Among For-Profit Bachelor's Degree Holders



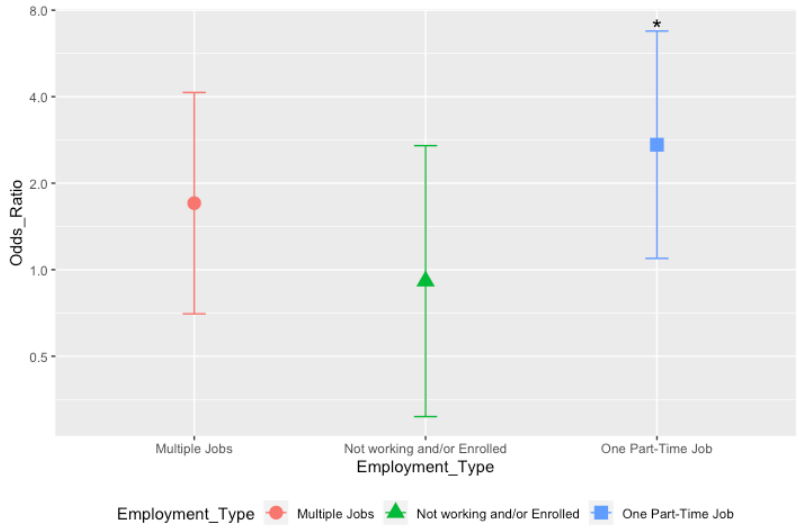
*** p<0.001, ** p<0.01, * p<0.05, † p<0.10 (two-tailed tests)
Source: Baccalaureate and Beyond Longitudinal Study, 2008-2012
Note: exp. coefficients graphed on a logarithmic scale; 95% confidence bands displayed; Within each ethno-racial group, exp. coefficients compared to non-profit degree holders

Figure 3.2. Predicted Probability of Switching Jobs At Least Once Within Two Years After Graduation (i.e., "employment instability") by College Type (Model 4.5)



*** p<0.001, ** p<0.01, * p<0.05, † p<0.10 (two-tailed tests)
Source: Baccalaureate and Beyond Longitudinal Study, 2008-2012
Note: 95% confidence bands displayed

Figure 3.3. Adjusted Odds Ratios Highlighting Likelihood of Holding Different Types of Employment Among For-Profit Degree Holders (Model 5).



*** p<0.001, ** p<0.01, * p<0.05, † p<0.10 (two-tailed tests)
Source: Baccalaureate and Beyond Longitudinal Study, 2008-2012
Note: ORs graphed on a logarithmic scale; 95% confidence bands displayed; reference category: One Full-time (FT) job

APPENDIX

Appendix 1.A. Maximum Likelihood Logistic Regression Models Predicting the Likelihood of Enrolling in a For-Profit by Test Score, Separation Evident, ELS 2002 Study Sample

	Q1		Q2		Q3		Q4	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
Main Reason:								
Cost/Affordability (ref)	-	-	-	-	-	-	-	-
Program of Study	7.191**	5.115	74.87***	79.39	17.63***	11.33	25.38**	29.59
Reputation of program	2.341	2.083	24.25**	27.62	7.886**	5.862	1.585	2.102
Location	0.622	0.477	4.285	4.787	0.784	0.635	0.829	0.988
Personal/family reasons	2.218	1.850	14.89*	17.70	3.987	3.409	6.684	8.778
Another reason	2.762	2.212	14.75*	16.67	11.94***	8.778	2.270	2.833
Race/Ethnicity:								
Non-Hispanic White (ref)	-	-	-	-	-	-	-	-
Non-Hispanic Black	0.299*	0.145	1.045	0.568	1.533	1.549	sep	
Latino/Hispanic	0.729	0.429	2.060	1.091	3.226+	2.117	1.280	0.819
Asian-American/Pacific Islander	0.163+	0.171	0.799	0.739	1.145	1.238	0.620	0.686
American Indian/Alaska native	sep		13.01*	16.92	sep		sep	
Multiracial	1.101	0.789	1.419	0.934	0.139+	0.161		
Parent's Highest Education Level:								
No College (ref)	-	-	-	-	-	-	-	-
Bachelor's degree	1.036	0.522	0.889	0.383	0.809	0.389	4.285+	3.697
Advanced Degree	0.551	0.546	0.306	0.284	0.575	0.433	2.258	2.642
Female	0.615	0.216	1.440	0.428	1.005	0.341	0.385*	0.159
SES Composite	0.497	0.212	0.877	0.375	0.894	0.350	0.258*	0.155
# Academic Risk Factors:								

Appendix 1.A. Maximum Likelihood Logistic Regression Models Predicting the Likelihood of Enrolling in a For-Profit by Test Score, Separation Evident, ELS 2002 Study Sample

	Q1		Q2		Q3		Q4	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
None (ref)	-	-	-	-	-	-	-	-
One	1.495	0.666	1.339	0.456	0.846	0.331	1.037	0.456
Two	2.005	1.027	0.673	0.341	1.027	0.547	1.481	0.903
Three	0.554	0.441	2.574+	1.439	1.435	1.214	sep	
Four+	1.819	1.242	1.905	1.801	sep		sep	
% Minority of H.S. (2003/4)	1.016*	0.00671	1.002	0.00707	0.990	0.00716	0.998	0.00818
Non-native English Speaker	0.727	0.325	0.589	0.434	0.793	0.612	0.684	0.810
Parent(s) Not Native Speakers	0.569	0.308	0.749	0.522	1.790	1.468	5.113	5.375
Generational immigrant status	1.318	0.368	1.274	0.462	0.521	0.341	0.673	0.544
% of 10th Graders in College Prep	0.996	0.00462	1.007	0.00548	1.000	0.00591	0.994	0.00656
Discussed College w/ Parents	0.755	0.518	sep		0.141**	0.0893	0.102+	0.128
Children	3.935	5.086	1.863	2.260	sep		sep	
Parent(s) attend PTO meetings	0.766	0.256	0.817	0.284	0.670	0.234	0.411+	0.212
# months between HS and College	1.050	0.0323	1.020	0.0339	1.081*	0.0406	1.089	0.101
Extracurriculars	0.687	0.223	0.516*	0.169	0.202***	0.0680	0.282*	0.142
Test Score	0.917*	0.0365	0.942	0.0697	0.976	0.0785	0.897	0.0721
Intercept	1.317	2.549	0.0388	0.143	0.671	2.955	53.91	306.5
Number of cases	650		1,190		1,800		2,211	

*** p<0.001, ** p<0.01, * p<0.05, † p<0.10 (two-tailed tests)

Note: Covariate separation noted with "sep"

Appendix 1.B. Maximum Likelihood Logistic Regression Models Predicting the Likelihood of Enrolling in a For-Profit By GPA, Separation Evident, ELS 2002 Study Sample

	Q1		Q2		Q3		Q4	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
Main Reason:								
Cost/Affordability (ref)	-	-	-	-	-	-	-	-
Program of Study	17.46***	14.54	31.24***	25.40	20.52***	15.28	9.340*	9.226
Reputation of program	9.393*	9.525	10.59*	9.976	6.060*	5.038	1.172	1.369
Location	1.248	1.139	1.096	1.011	0.156+	0.170	1.743	1.807
Personal/family reasons	4.131	4.211	4.250	3.925	3.068	2.914	5.565	6.288
Another reason	1.880	1.913	6.304*	5.491	11.44**	9.433	2.013	2.598
Race/Ethnicity:								
Non-Hispanic White (ref)	-	-	-	-	-	-	-	-
Non-Hispanic Black	0.743	0.449	0.654	0.359	1.754	1.016	sep	
Latino/Hispanic	0.886	0.500	1.444	0.755	3.390*	1.663	6.447+	6.841
Asian-American/Pacific Islander	1.369	1.494	0.437	0.404	1.913	1.582	0.698	0.863
American Indian/Alaska native	3.073	3.714	10.69	16.62	sep		sep	
Multiracial	0.0451**	0.0517	1.749	1.044	sep		0.342	0.409
Parent's Highest Education Level:								
No College (ref)	-	-	-	-	-	-	-	-
Bachelor's degree	0.945	0.561	1.158	0.485	2.123+	1.07	1.653	1.386
Advanced Degree	0.305	0.324	0.329	0.249	1.033	0.904	2.592	2.730
Female	1.049	0.396	0.975	0.304	1.477	0.503	0.574	0.289
SES Composite	0.830	0.358	0.540	0.209	0.463+	0.187	0.633	0.324
# Academic Risk Factors:								
None (ref)	-	-	-	-	-	-	-	-

Appendix 1.B. Maximum Likelihood Logistic Regression Models Predicting the Likelihood of Enrolling in a For-Profit By GPA, Separation Evident, ELS 2002 Study Sample

	Q1		Q2		Q3		Q4	
Predictor Variable	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
One	0.554	0.242	1.318	0.462	1.892+	0.679	0.979	0.457
Two	0.886	0.510	0.564	0.270	1.993	0.918	2.045	1.245
Three	0.951	0.661	1.102	0.677	2.034	2.229	sep	
Four+	0.297	0.359	2.113	1.627	1.307	1.534	sep	
% Minority of H.S. (2003/4)	1.010	0.00726	1.005	0.00697	0.986*	0.00604	1.011	0.00897
Non-native English Speaker	1.560	0.829	0.259+	0.180	0.425	0.359	1.089	0.967
Parent(s) Not Native Speakers	1.207	0.613	0.947	0.730	1.176	1.009	0.540	0.495
Generational immigrant status	0.948	0.347	1.445	0.491	1.017	0.444	1.058	0.494
% of 10th Graders in College Prep	0.994	0.00526	1.000	0.00518	0.997	0.00574	0.979*	0.00703
Discussed College w/ Parents	0.689	0.639	0.477	0.317	0.118***	0.0743	sep	
Children	1.227	2.984	6.132+	5.758	sep		sep	
Parent(s) attend PTO meetings	0.603	0.276	0.477*	0.146	1.256	0.419	0.320+	0.205
# months between HS and College	1.006	0.0352	1.037	0.0370	1.171***	0.0471	0.969	0.0661
Extracurriculars	0.790	0.292	0.599+	0.180	0.154***	0.0557	0.242*	0.172
HS GPA	1.847	1.424	0.393	0.279	0.211+	0.178	0.664	0.679
Intercept	0.0296	0.0681	0.235	0.420	5.219	13.33	0.161	0.682
Number of cases	500		1,200		1,700		2,100	

*** p<0.001, ** p<0.01, * p<0.05, † p<0.10 (two-tailed tests)

Appendix 3.A. Population weighted descriptive statistics on college field of study, B&B 2008-2012 Study Sample *

Aggregated categories	Corresponding 2000 Classification of Instructional Programs (CIP) codes	Pct.	SE
Science, Technology, Engineering and Mathematics	Includes computer and information sciences; engineering and engineering technology; biological and physical sciences, science technology, mathematics, and agricultural sciences.	16.6	0.582
Social Sciences & Humanities	Includes family and consumer sciences; human sciences; social sciences; psychology; liberal arts and sciences; general studies and humanities; multi/interdisciplinary studies; other; basic skills; citizenship activities; health-related knowledge and skills; interpersonal and social skills; leisure and recreational activities; personal awareness and self- improvement; area, ethnic, cultural, gender, and group studies; English language and literature/letters; foreign languages, literatures, and linguistics; visual and performing arts; philosophy and religious studies; and history.	26.26	0.007
Health	Includes allied health, pre-medical and pre-dentistry programs; mental and social health services; public health; veterinary medicine; and nursing	8.3	0.442
Business	Includes business services and business, management, marketing, and related support services	25.24	0.83
Education	Includes educational administration, curriculum and instruction, student counseling, teaching support, and special education.	9.33	0.425
Other Applied	includes personal and consumer services; manufacturing, construction, repair, and transportation; military technology and protective services; architecture; communications; public administration and human services; design and applied arts; law and legal studies; library sciences; and theology and religious vocations	14.22	0.582

Note: * see Cataldi et al. 2014 for detailed coding information; values may not sum to 100 due to rounding

Appendix 3.B. Population weighted descriptive statistics on occupation, Wave 1, B&B 2008-2012 Study Sample

Aggregated categories	Corresponding 2000 BLS Standard Occupational Classification (SOC) codes	Pct.	SE
Management, Business, Finance, & other professional occupations	Air transportation professionals, business managers, business occupations (non-management), communication professionals, Computer/information systems occupations, Engineering technicians, engineers, Information professionals, legal professionals, life scientists, Math-related occupations, physical scientists, social scientists, social service professionals	39.7	0.869
Education	Other educators, PK-12 educators, postsecondary educators …	15.13	0.567
Office & administrative support occupations	Business/legal support (non-secretarial), secretaries & administrative assistants	14.12	0.616
Healthcare & personal care	Healthcare professionals (non-nurses), nurses, other healthcare occupations, Personal care occupations	10.37	0.487
Service occupations	Artists & designers, Food Service occupations, military, protective service occupations, sports occupations, Transport support occupations …	10.02	0.521
Sales occupations	Sales occupations	7.69	0.483
Blue collar occupations	Agriculture occupations, construction/mining occupations, Fitters, tradesmen, & mechanics	2.93	0.313

Note: Adapted from the Bureau of Labor Statistics 2000 Standard Occupational Classification (SOC) system; values may not sum to 100 due to rounding.

Appendix 3.C. Covariate balance before and after propensity score weight adjustment, B&B 2008-2012 Study Sample, (Treatment = For-Profit)

Predictor Variable	Unweighted p val.	Weighted p val.
Age	0.000	0.028
Parents' Income in 2008	0.000	0.004
Female	0.018	0.573
Non-Hispanic White	0.000	0.481
Non-Hispanic Black	0.000	0.294
Hispanic/Latino	0.000	0.526
Asian-American	0.316	0.139
American Indian/Alaska Native	0.670	0.072
Multiracial	0.520	0.124
Other race	0.000	0.953
Parents' Homeownership	0.000	0.088
Marital status	0.000	0.044
Children	0.000	0.11
Age at College Entry	0.000	0.573
Age at College Completion	0.000	0.01
Deviation from col. entry to completion	0.000	0.001
SAT Score	0.000	0.288
High School GPA	0.000	0.051
Lives in MSA	0.000	0.735
Lives in Northeast	0.991	0.075
Lives in Southeast	0.332	0.96
Lives in Midwest	0.198	0.591
Lives in West	0.014	0.382
Military Service	0.000	0.446

Note: Significance tests are based on one-way ANOVAs or log-linear analyses. Results are weighted using propensity score weights. Alternative method of assessing balance consistent with the recommendations of (Guo and Fraser 2009; Holmes 2013; Holmes and Olsen 2010) for small-sample propensity score methods. Balance was also assessed within each racial stratum (NH Whites, NH Blacks, Latinos, & Asians) and largely mirrored what is displayed above. However, balance was not achieved on the following covariates - for NH Blacks: Marital Status; for Latinos: Lives in MSA, Northeast, and West, and for Asians: Marital Status, SAT Score, Lives in Midwest, and Military Service.

Appendix 3.D. Propensity score covariate adjusted results of the effect of an individual's demographic, household, college & employment characteristics on their logged annual wages in 2009, by race (transfers excluded), B&B 2008-12 Study Sample

	Pooled Sample		*Whites*		*Blacks*		*Latinos*		*Asians*	
Predictor Var.	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE	e(β)	SE
For-Profit	1.049	0.09	1.068	0.127	0.622*	0.147	0.984	0.185	0.416**	0.134
Demo. Char.										
Age	1.052	0.04	1.068*	0.0323	1.004	0.0686	0.994	0.055	0.887+	0.06
Par. income ($)	1.000***	0.00	1.000***	0.000	1.000	0.000	1.000**	0.000	1.000	0.000
Female	0.980	0.033	0.950	0.0375	1.176+	0.0969	1.180*	0.085	0.889	0.072
Race:										
NH White (ref)	-	-	-	-	-	-	-	-	-	-
NH Black	0.924	0.0563	-	-	-	-	-	-	-	-
Asian/As-Am	1.064	0.0503	-	-	-	-	-	-	-	-
Amer. Indian	1.013	0.106	-	-	-	-	-	-	-	-
Multiracial	1.102	0.103	-	-	-	-	-	-	-	-
Other race	1.011	0.0783	-	-	-	-	-	-	-	-
Latino (any race)	1.015	0.0544	-	-	-	-	-	-	-	-
Par. Own Home	0.893**	0.0360	0.844**	0.044	1.113	0.122	0.934	0.072	1.002	0.091
Mother has BA	1.010	0.0424	1.019	0.0481	1.161	0.241	1.156	0.134	1.037	0.12
Married	1.017	0.0288	1.025	0.0324	1.019	0.108	1.033	0.07	0.793*	0.09
Children	0.856*	0.0649	0.859	0.0833	1.066	0.184	1.002	0.115	0.763	0.28
Col. & Cog. Var.										
Age at entry	0.903**	0.0331	0.901*	0.0437	0.849	0.160	1.065	0.074	0.916	0.09
Age at grad.	1.067+	0.0396	1.057	0.0477	1.190	0.233	0.942	0.081	1.125	0.14
Dev. entry/grad.	0.996*	0.0016	0.996*	0.002	0.994	0.0076	1.003	0.003	1.004	0.004

SAT Score	1.000	0.0001	1.000	0.000	1.001*	0.0004	1.000	0.003	1.000	0.000
HS GPA:	1.007	0.0171	1.009	0.021	1.022	0.0396	1.008	0.048	0.976	0.065
Col. GPA	1.000	0.0287	0.994	0.031	0.974	0.107	1.082	0.093	1.306**	0.128
Employ. Char.										
% time unem.	0.998*	0.0010	0.997*	0.001	1.001	0.0025	0.996	0.003	0.990**	0.004
Hrs wrk/wk	1.025***	0.0025	1.026***	0.003	1.027***	0.0068	1.027***	0.005	0.993	0.008
# jbs since BA	0.953***	0.0137	0.944***	0.0154	0.961	0.0434	0.994	0.031	0.980	0.046
# jbs now:										
1 PT (ref)	-	-	-	-	-	-	-	-	-	-
1 FT	1.354***	0.0959	1.258**	0.105	2.031***	0.395	1.373**	0.15	2.414***	0.471
Mul.	1.133	0.0959	1.070	0.108	1.640*	0.357	0.990	0.147	2.338***	0.515
Military ser.	1.207*	0.110	1.298+	0.174	1.239	0.447	1.482	0.499	0.497**	0.104
Prop. Score	1.952	1.063	0.854	1.649	1.094	1.424	0.916	0.601	1.332	4.962
Other controls										
Col. Select.	Yes		Yes		Yes		Yes		Yes	
FGLI	Yes		Yes		Yes		Yes		Yes	
Col. major	Yes		Yes		Yes		Yes		Yes	
Region	Yes		Yes		Yes		Yes		Yes	
Occupation	Yes		Yes		Yes		Yes		Yes	
Intercept	2296***	958 9	3549***	1403	1015***	1230	2325***	1650	1,146	1003
Adjusted R^2	0.478		0.4705		0.459		0.5819		0.572	
Number of cases	2,800		2,200		190		210		130	

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10 (two-tailed tests)
Variable names abbreviated; reference Table 3.1 for full names